

RATH, YOUNG AND PIGNATELLI

Professional Association

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SHERILYN BURNETT YOUNG
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April 21, 2005

HAND DELIVERED

Water Council
c/o Harry T. Stewart, P.E., Director
Water Division
N.H. Department of Environmental Services
29 Hazen Drive
Post Office Box 95
Concord, N.H. 03302-0095

RECEIVED

APR 21 2005

05-07 WC

Re: Notice of Appeal of Water Quality Certification WQC # 2004-002

Dear Director Stewart:

Enclosed for filing in the above-captioned matter please find an original and 20 copies of a Notice of Appeal regarding the above-referenced Certification.

We would appreciate your acknowledgment that you have received the enclosed by your signature below where indicated.

Very truly yours,
Sherilyn Burnett Young
COPY

SBY/smw
Enclosure

Sherilyn Burnett Young

cc: Director Harry T. Stewart
Commissioner Michael P. Nolin
Mr. Frederick McGarry
Attorney Anthony I. Blenkinsop
Attorney Susan Duprey

I have received the above-referenced Notice of Appeal.

Harry Stewart or Designee

C O U N S E L L O R S A T L A W

NASHUA OFFICE: THE GLASS TOWER · 20 TRAFALGAR SQUARE · NASHUA, NEW HAMPSHIRE 03063 · (603) 889-9952 · FAX (603) 595-7489
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Water Council
c/o Harry T. Stewart, P.E., Director
Water Division
N.H. Department of Environmental Services
29 Hazen Drive; Post Office Box 95
Concord, N.H. 03302-0095

Re: Notice of Appeal of Water Quality Certification WQC # 2004-002

Dear Director Stewart:

Please consider this submittal a Notice of Appeal of the decision of the Department of Environmental Services to issue Water Quality Certification WQC # 2004-002 to Motorsports Holdings, LLC (the "Applicant") to construct a racetrack facility in, around and over significant wetlands areas in Tamworth, New Hampshire (the "Project"). The Certification was issued on March 22, 2005. This Notice of Appeal is being submitted pursuant to NH Admin Rule Env-WC 203.03 on behalf of the below-listed individuals, all of whom are property owners in the Tamworth area, and many of whom are members of a citizens group called FOCUS: Tamworth. On behalf of FOCUS: Tamworth, we submitted comments and participated actively during the public comment process that resulted in issuance of the above-captioned Certification. The following relevant documents are attached hereto:

1. Water Quality Certification WQC # 2004-002, dated March 22, 2005 (attached hereto as Exhibit A).
2. Letter of January 26, 2005 from Rath, Young and Pignatelli, P.A. to Mr. Paul Piszczek, including attached report from Haley & Aldrich, Inc. dated January 25, 2005 (attached hereto as Exhibit B).
3. Letter of November 19, 2004 from Rath, Young and Pignatelli, P.A. to Mr. Paul Piszczek, including attached media articles regarding MtBE contamination (attached hereto as Exhibit C).
4. "Tainted Wells Raise Questions About MtBE," Portsmouth Herald, April 18, 2005 (attached hereto as Exhibit D).
5. DES Fact Sheet WD-WSEB-3-19 (2000) (attached hereto as Exhibit E).

As discussed below, there is a significant information gap in the record related to the handling and management of gasoline and other petroleum products at the Project site. The

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purpose of this letter is to request that the Water Council withdraw the Certification, request the Department to engage in further fact-finding regarding the Applicant's use, handling and management of petroleum products at the Project site, require the Applicant to submit all further information necessary for the Department to fully evaluate the potential for violations of surface water quality standards, reconsider its issuance of the Certification in light of such further information to determine what regulatory gaps may exist, determine what additional conditions should be included in a Certification to address such gaps, and direct the Department to either issue a modified Certification or deny the Certification, as appropriate, after such re-evaluation.

The site which is the subject of the aforementioned Certification is a 251-acre site in Tamworth, New Hampshire which is centered on the north slope of Mount Whittier in the Ossipee mountains. The site contains numerous wetlands areas and surface water bodies, some of which are hydrologically connected to the Bear Camp River nearby. The site is also located directly over primary and secondary recharge areas for the Ossipee Aquifer, which is New Hampshire's largest stratified-drift aquifer. The Aquifer, which is a major source of drinking water for Tamworth and as many as 28 surrounding towns, is a high-yield aquifer that can recharge quickly with rain water, but which is vulnerable to contamination.

The Certification was issued to allow construction of a racetrack facility on the Project site. The proposed Project includes the construction and operation of a 3.1-mile long racetrack and associated facilities, including vehicular service and storage garages. See Certification, Exhibit A. The Project also includes numerous accessory buildings including an administration building, maintenance building, hotel, restaurant, club house and "garagemahals" as well as various access roads and paved pit areas and parking areas.

As set forth in greater detail below, the issuance of the Certification is (A) contrary to the applicable statute and rules, and (B) arbitrary and capricious, because the Applicant failed to provide the Department with information critical to the decision process. See Env-WC 203.16. In issuing the Certification, the Department has concluded that construction and operation of the Project will not violate State surface water quality standards. See Certification, Exhibit A; see also Env-Ws 455.02(c). However, this conclusion was based on incomplete information. The Applicant failed to provide the Department with all of the information necessary for the Department to meaningfully evaluate the potential impacts of this Project on surface water quality. As a result, the Department was also unable to meaningfully evaluate whether the prevention of such impacts would be addressed by any applicable regulatory scheme, what other conditions, limitations and protections should appropriately be included in a Certification, or whether a Certification could legally be issued for this Project. Therefore, as a result of the Applicant's failure to provide the information necessary to determine whether or not such gaps exist, the Department was unable to lawfully certify that the Project will not result in violations of surface water quality standards. See Env-Ws 455.02(c).

Accordingly, we are filing this Notice of Appeal to ask the Council to withdraw the Certification and request the Department to engage in further fact-finding as explained more

fully below, require the Applicant to provide further information regarding the Project, reconsider and re-evaluate the Certification in light of such information, and direct the Department to either issue a modified Certification or deny the Certification as appropriate in light of such re-evaluation.

I. Identity of Persons Moving for Reconsideration:

Virginia C. Thomas
904 Whittier Road
Tamworth, NH 03886

St. Andrews-in-the-Valley
Episcopal Church
678 Whittier Road
Tamworth, NH 03886
(owner: Protestant Episcopal Church
of New Hampshire
Diocesan House
63 Green Street
Concord, NH 03301)

Anthony Leo LaForge
57 May's Way
Tamworth, NH 03886

Lois M. Merrithew
60 May's Way
Tamworth, NH 03886

Edgar E. Merrithew
60 May's Way
Tamworth, NH 03886

Frank Drew
39 May's Way
Whittier Road
Tamworth, NH 03886

Kim Drew
39 May's Way
Whittier Road
Tamworth, NH 03886

Bernard Haines
15 May's Way
Whittier Road
Tamworth, NH 03886

Gena Morgan
15 May's Way
Whittier Road
Tamworth, NH 03886

John Littlefield
74 May's Way
Whittier Road
Tamworth, NH 03886

Arlene Littlefield
74 May's Way
Whittier Road
Tamworth, NH 03886

Keith Hopgood
22 May's Way
Whittier Road
Tamworth, NH 03886

Paul Geary
22 May's Way
Whittier Road
Tamworth, NH 03886

George Moore
66 May's Way
Whittier Road
Tamworth, NH 03886

Maureen Moore
66 May's Way
Whittier Road
Tamworth, NH 03886

William K. Tee
905 Whittier Road
Tamworth, NH 03886

Ruth F. Tee
905 Whittier Road
Tamworth, NH 03886

Richard Whiting
188 Gilman Valley Road
Tamworth, NH 03886

Melody Fortier
204 Summit View Drive
Tamworth, NH 03886

Jackie & Peter Whyte
260 Summit View Drive
Tamworth, NH 03886

Ed & Lisa Morin
206 Summit View Drive
Tamworth, NH 03886

Christine Johnson
877 Whittier Road
Tamworth, NH 03886

Robin Liakos
721 Whittier Road
Tamworth, NH 03886

Daniel Liakos
716 Whittier Road
Tamworth, NH 03886

Cathy Kalayjian
716 Whittier Road
Tamworth, NH 03886

Carole Grace
600 Whittier Road
Tamworth, NH 03886

Harry D. Thompson
1117 Whittier Road
Tamworth, NH 03886

William and Louise Wroblewski
1445 Ossipee Mt. Highway
Tamworth, NH 03886

Betsy Spencer
Bear Camp Garden
100 Route 25 West
West Ossipee, NH 03890

Peter Coldwell
Bear Camp Garden
100 Route 25 West
West Ossipee, NH 03890

Anita Nudd Cameron
19 Nudd Road
West Ossipee, NH 03890

Betsy Watt
43 Tamworth Road
Tamworth, NH 03886

Jeanne Bergen
PO Box 122 (Chocorua Road)
Tamworth, NH 03886

Amy K. Berrier
139 Bryant Road
Tamworth, NH 03886

Thaddeus B. Berrier
139 Bryant Road
Tamworth, NH 03886

Dominic Bergen
PO Box 122 (Chocorua Road)
Tamworth, NH 03886

Ruth G. Timchak
418 Old Mail Road
Tamworth, NH 03886

Stephen J. Gaal
334 Pease Hill Road
Tamworth, NH 03886

Katharine T. Thompson
611 Mountain Road
South Tamworth, NH 03883

Thomas Vachon
9 Mason Hill Road
South Tamworth, NH 03883

Katherine C. Vachon
9 Mason Hill Road
South Tamworth, NH 03883

Sheldon P. Perry
191 Great Hill Road
Tamworth, NH 03886

Nina S. Perry
191 Great Hill Road
Tamworth, NH 03886

David Little
468 Great Hill Road
Tamworth, NH 03886

William W. Farnum
1854 Great Hill Road
Tamworth, NH 03886

Donna Polhamus
39 Mt. View Estates
Tamworth, NH 03886

Cecile Bates
1160 Whittier Road
Tamworth, NH 03886

Mary Beth McAllister
135 Granite Road
Ossipee, NH 03864

Margaret A. Johnson
3094 Chinook Trail
Wonalancet, NH 03897

Dennis Chesley
135 Granite Road
Ossipee, NH 03864

Jennifer M. Hocking-Wiley
93 Downs Road
Madison, NH 03849

Many of the persons listed above are either direct abutters to the proposed Project site or landowners in close enough proximity to the site that the proposed Project will have serious and damaging effects on them and their use of their property. In particular, due to their location near the site, each person listed above will be affected by one or more of the following impacts: damage or destruction of wetlands beyond the border of the proposed Project site from contamination, contamination of groundwater and the drinking water supply, contamination of the Bear Camp River and other surface waters, loss and damage to the aesthetic quality of the

property, disruption and loss of wildlife and habitat, loss of the recreational and conservation value of their property, and diminution of property values. The Department is required under Federal and State law and the applicable State regulations to issue a Certification only if construction and operation of the Project will not violate State surface water quality standards. See 33 U.S.C. §1341(a); Env-Ws 455.02(c). The proposed Project would pose a serious, continuing threat to State surface waters both on and around the Project site and would have widespread and significant effects. The persons listed above are aggrieved by the Department's decision because the Project will cause them to suffer significant harm due to their proximity to the site.

II. Statement of reasons why the Water Quality Certification should not have been issued and should be withdrawn and re-evaluated in light of additional necessary information from the Applicant:

Any applicant for a Federal Section 404 wetlands permit is required to apply to the Department's Bureau of Watershed Management (the "Bureau") for a Section 401 Water Quality Certification. 33 U.S.C. §1341(a). The Department may only issue this Certification if the Bureau determines that construction and operation of the proposed Project will not result in violations of State surface water quality standards. Id.; Env-Ws 455.02(c). The clear intent of these Federal and State statutory schemes is to protect water quality and prevent contamination, rather than merely address remediation. The purpose of the Federal Clean Water Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." 33 U.S.C. §1251(a). The purpose of RSA 485-A is "to protect water supplies, to prevent pollution in the surface and groundwaters of the State and to prevent nuisances and potential health hazards." RSA 485-A:1. To fulfill this purpose, the State has enacted surface water quality standards designed to protect our water resources. See RSA 485-A:8; Env-Ws 1700.

In the present case, the Applicant has applied to the Bureau for a Water Quality Certification in connection with its pending application before the U.S. Army Corps of Engineers for a Section 404 Federal wetlands permit. According to the plans submitted by the Applicant, the racetrack Project will involve the use, storage, and likely release of racing fuel, which contains unregulated levels of MtBE. Vehicles (automobiles and motorcycles) will be raced on the track and repaired and maintained in the pit, repair and paddock areas. The Applicant plans to pump thousands of gallons of this high-octane fuel every year at its on-site fueling operations, which it indicates will utilize a mobile refueling system of unspecified size, location, design and configuration.

During the public comment period, a large number of serious concerns were brought to the Bureau's attention regarding the potential for impacts to surface waters from the use, storage and possible spillage of petroleum products at the racetrack facility, and the serious potential for such releases to cause violations of surface water quality standards in surface waters both onsite and offsite. In particular, these concerns included likely releases of MtBE (methyl tertiary butyl ether), benzene, and other hazardous compounds from petroleum products. These concerns were raised not only by members of the public (including members of FOCUS: Tamworth) as verbal

and written testimony at the public hearing and other comments submitted directly to the Bureau, but also, significantly, by at least one person within the Department itself.

In testimony at the public hearing held on October 6, 2004 (the records of which should be included in the Department's file for this application), members of the public expressed their misgivings about the intensity of vehicular operation and maintenance and their concerns about the potential for these operations to impact the wetlands on the site and the connected wetlands offsite, including the Bear Camp River. That testimony included scientific evidence of the current water quality of the area's surface waters by Michelle Daly of the University of New Hampshire. Testimony was also presented regarding the serious potential impact of releases of petroleum products to the Ossipee Aquifer and the drinking water for the 22 communities reliant upon that aquifer by Dr. Robert Newton, Professor in the Department of Geology at Smith College.

In addition, the environmental engineering firm of Haley & Aldrich, Inc. submitted a report demonstrating that even a very small release of gasoline from operations is likely to result in violations of surface water quality standards for MtBE and benzene in adjacent wetlands. See Report of Haley & Aldrich, Inc., January 25, 2005, included in materials attached as Exhibit B. The report analyzed one possible situation in which gasoline could be released: a spill or other release from the proposed fueling area in Paddock Area A, which will be directly connected to a stormwater detention basin that will flow into adjacent on-site wetlands, which in turn will ultimately flow into the Bear Camp River. The results of that analysis demonstrate that if as little as two ounces of racing fuel were released into the detention basin, surface water standards would be violated in the adjacent wetlands, and if as little as thirteen ounces were released into the detention basin, those standards would be violated in the Bear Camp River. The significance of these results is clear when considered in the context of the Applicant's plan to pump thousands of gallons of racing fuel at the facility every year.

On behalf of FOCUS: Tamworth, we have submitted information regarding the very real threat that MtBE poses to the waters of our State. See Letter of January 26, 2005 from Rath, Young and Pignatelli, P.A. to Mr. Paul Piszczek, attached hereto as Exhibit B; Letter of November 19, 2004 from Rath, Young and Pignatelli, P.A. to Mr. Paul Piszczek, attached hereto as Exhibit C. MtBE is highly soluble in water, migrates very rapidly in groundwater, and very small quantities have the potential to contaminate rather large volumes of water. The Department has estimated that approximately sixty percent of all active gas stations in the State, even with state of the art technology, have experienced releases of gasoline containing MtBE, and that these releases are a serious threat to New Hampshire's water resources. Numerous communities have discovered that their water supplies are contaminated, including the Town of Epping, which recently discovered high levels of contamination in private wells. See "Tainted Wells Raise Questions About MtBE," Portsmouth Herald, April 18, 2005, attached hereto as Exhibit D. Studies with animals suggest drinking water with high MtBE content may cause stomach irritation, liver and kidney damage, and nervous system effects, and an increased amount of liver and kidney cancer has been found in rats and mice breathing high levels of

MtBE. Because of the animal studies on MtBE, the State of New Hampshire considers MtBE a possible human carcinogen and has developed a maximum contaminant level for MtBE of 13 micrograms per liter. See DES Fact Sheet WD-WSEB-3-19 (2000), attached hereto as Exhibit E. While ordinary retail gasoline contains at most 5% MtBE by volume, racing formula gasoline of the type that will be used at the racetrack facility can contain up to 14% or more of MtBE by volume. As indicated in the Applicant's Project plans, the Applicant fully expects that many of these vehicles will crash, proposes that they will be fueled by an on-site mobile refueling truck, and plans to conduct repair and maintenance work on the vehicles in the pit and repair areas. All of these activities carry with them the very real potential for spills and releases of gasoline.

Significantly, Mr. Frederick McGarry of the Department, in a letter to the Applicant dated December 29, 2004, validated these concerns about the risks to surface and groundwater from a petroleum release at the site. See Exhibit B. In that letter (a copy of which was sent to the Bureau), Mr. McGarry asked the Applicant to provide more information regarding numerous aspects of the facility, including: the octane rating of the gasoline to be used; the specific details about the planned fueling operations (noting that the information the Applicant had submitted was insufficient to allay his concerns); information about the planned use of the "pit lane" areas and whether refueling would take place there; further specifications for the collection of runoff containing oil and grease; and plans for dealing with gasoline spills resulting from accidents on the racetrack. Mr. McGarry informed the Applicant that answers to these questions would be necessary before the Department could fully address the concerns raised by the proposed Project.

However, to our knowledge, no response was ever received to this letter, nor has the Applicant ever provided further information to the Bureau in response to any other concern raised during the public comment period.

The Department's sole response to these concerns appears to be contained in a single paragraph in the Certification. In its "Finding" D-6, the Department states that "This Project includes the creation of permanent and temporary storage areas for vehicular and non-vehicular fuels and petroleum-based compounds, including high performance motor fuel, hydraulic oil, and heating oil. The Department's Waste Management Division administers permitting processes to address fuel storage under RSA 146-A and RSA 146-C and rules adopted pursuant thereto. This Project is not expected to violate surface water quality standards provided the storage of fuels and petroleum-based compounds are permitted and conducted in accordance with requirements of the Department's Waste Management Division." See Certification, Exhibit A.

This response is problematic because, as explained above, the Applicant has failed to provide the Department enough information regarding the plans for fuel storage, handling and use for the Bureau to be able to make a meaningful determination about whether RSA 146-A (regulating above-ground petroleum storage tanks) or RSA 146-C (regulating underground storage tanks) and implementing regulations will, in fact, apply to this Project, or whether they will actually be sufficient to ensure that the Project does not result in a violation of State water standards. As a result of the Applicant's failure to provide sufficient information, there appears

to be a significant information gap regarding critical operations at this facility. That failure, in turn, has led the Department to issue a Certification that does not meet the requirements of Env-Ws 455.02(c).

RSA 146-A, which regulates aboveground petroleum storage facilities, requires that such facilities be registered with the State, requires that discharges be reported, and imposes liability and cleanup obligations upon those responsible. See RSA 146-A:2 et seq. However, although the statute does prohibit discharge or spillage of petroleum products into the surface or groundwater of the State, the clear purpose of the statute is actually remedial rather than preventive. See RSA 146-A:3. According to RSA 146-A:1, the purpose of the statute is "...to cope with the problem of pollution from the spillage or discharge of oil...to provide procedures that will expedite the cleanup of oil spillage, mitigate the adverse effects of oil discharges, encourage preventive measures, and provide financial assistance to victims of such discharges and to encourage private organizations to assist in these efforts." It is notable that the statute is intended to encourage, rather than require, preventive measures. This is in sharp contrast to the purpose of the Federal Clean Water Act and New Hampshire RSA 485-A:8, each of which were enacted to prevent water pollution. See 33 U.S.C. §1251; RSA 485-A:8. Furthermore, although regulations implementing RSA 146-A do include a registration and approval process for aboveground petroleum storage, those regulations do not apply to mobile fueling systems and therefore may not apply to this project at all. See Env-Wm 1402.02. Similarly, the extent to which RSA 146-C (regulating underground storage facilities) will actually apply to this Project is unclear because the Applicant has provided insufficient information about whether, to what extent, and exactly how it intends to use underground storage tanks at the Project site.

Based on the information the Applicant has provided, it appears that the Project will include an onsite mobile refueling area rather than a stationary aboveground or underground tank system, and therefore it is quite possible that neither RSA 146-A nor RSA 146-C will apply to most operations on the Project site. However, as noted above, despite numerous public concerns and a request from the Department itself, the Applicant has never provided more details regarding the location, size, and configuration of the mobile fueling station or other storage systems, or the details of fueling operations, spill protection and response measures. In fact, the Applicant has never responded to Mr. McGarry's letter or any other concerns that were raised by the public. Unfortunately, the Bureau has issued the Certification without receiving from the Applicant all necessary information, and assumes that these two statutory schemes will protect surface water quality. In doing so, the Department has acted contrary to the Federal Clean Water Act, the New Hampshire Water Pollution and Waste Disposal Act, and the Department's own rules. This is of particular concern because the State obviously shares the Tamworth public's concern over MtBE contamination from gasoline releases since it has sued petroleum manufacturers to recover damages from the widespread MtBE contamination already present in the State.

Furthermore, even if RSA 146-A and/or RSA 146-C did apply to this Project, those statutes only address petroleum storage systems. The Applicant's plans indicate that numerous other activities will occur at this facility that involve the use and handling of petroleum products, including possible refueling operations in the pit lanes and repair areas, spills and releases in the repair and paddock areas, and, of course, releases resulting from accidents on the racetrack itself. As noted above, the Department has received significant amounts of testimony and evidence regarding the potential for accidental releases and the serious consequences that may result, and Mr. McGarry of the Department has specifically asked the Applicant for more information regarding these activities. However, the Applicant has failed to respond to these concerns.

As a result of the Applicant's failure, it has left the Department with inadequate information upon which to base its decision in this matter. The Applicant must be required to provide all further information necessary for the Department to meaningfully evaluate what protections, if any, State laws and rules will provide to ensure that this project does not violate State surface water quality standards. This is critically important in this case, because if RSA 146-A and RSA 146-C do not, in fact, adequately regulate the activities that are likely to result in releases of petroleum products and foreseeably lead to violations of such standards, the Section 401 Certification, as currently conditioned, does not meet the certification standards. The cleanup authority under RSA 146-A will offer little relief to those whose wetlands and water supplies are contaminated as a result of the Project. This is contrary to the stated protective purpose of the Certification itself.

The Department has the power to include in a Certification all conditions necessary to assure that State surface water quality standards will be met. See 33 U.S.C. §1341(c). Under State law, the Department (acting here through the Watershed Management Bureau) may prescribe "reasonable conditions as may be necessary or desirable to fulfill the purpose" of RSA 485-A or of federal law (in this case, the Federal Clean Water Act). RSA 485-A:13, I(a). The purpose of RSA 485-A is "to protect water supplies, to prevent pollution in the surface and groundwaters of the State and to prevent nuisances and potential health hazards." RSA 485-A:1. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." 33 U.S.C. §1251(a).

It is clear, therefore, that if the Department determines that this Project may result in impacts to surface water that are not adequately addressed by other State regulatory schemes, it has the power and the obligation under State and Federal law to include in a Certification any protective measures reasonably necessary to ensure the integrity of the State's surface waters. The Certification in this case does not contain any such protections, and was based on inadequate and incomplete information. The Applicant must provide more information to the Department so the Department can determine what protective statutes actually apply, what additional protective measures may be necessary, and whether a Certification is appropriate for this project at all.

The issuance of a Certification without such information and analysis is contrary to Federal and State laws and rules. Given the serious nature of the risks involved and the significant gaps in information and regulatory protection, it is also an arbitrary and capricious action that can and should be remedied.

III. Facts and Law upon which the Council should rely in granting relief.

The general facts and the laws and regulations relevant to our Appeal are set forth in Section II of this letter, as well as in the documents referenced at the beginning of this letter, which are attached hereto and incorporated herein by reference. The Department's record regarding this Certification contains more detailed information, including the Applicant's application, supporting materials, a record of the October 6, 2004 public hearing including all oral and written testimony submitted, and other comments and correspondence from the public.

IV. Statement of the specific relief or ruling requested.

For the foregoing reasons, we request that the Council:

- (1) Withdraw the Certification and request the Department to engage in further fact-finding regarding the Applicant's use, handling and management of petroleum products at the Project site;
- (2) Require the Applicant to submit to the Department all such further information as noted in this letter necessary to permit the Department to meaningfully evaluate the potential for surface water quality impacts;
- (3) Reconsider the issuance of the Certification in light of such further information to determine what regulatory gaps may exist regarding prevention of surface water quality exceedences;
- (4) Determine what additional conditions, limitations, and protections should be included in a Certification to address such gaps, or if a Certification is legally appropriate at all for this project; and
- (5) Direct the Department to either issue a modified Certification or deny the Applicant's request for a Section 401 Certification, as appropriate, after the Department's re-evaluation of the proposed Project in light of such further information.

V. Decision which is the subject of this Motion.

A copy of Water Quality Certification WQC # 2004-002 dated March 22, 2005 is attached hereto as Exhibit A.

CONCLUDING STATEMENT

This Certification authorizes the Applicant to proceed with a massive private project, the likes of which has never been seen by Tamworth or the surrounding communities. The proposed project will create significant environmental impacts with far-reaching ramifications. These impacts are heightened by the fact that the Project involves the storage, use, and handling of significant amounts of petroleum products for refueling and other operations, which poses a significant threat of contamination to the water resources both onsite and in the surrounding area. In light of the foregoing, the likelihood of the construction or operation of this Project leading to violations of State surface water quality standards should be subject to heightened scrutiny, and the Department should be taking every precaution to protect the public from the adverse impacts of the proposed Project.

However, the Department is lacking some critical information regarding the usage, handling and management of petroleum products at the Project site. This lack of adequate information prevents the Department from making a fully-informed determination that the Applicant has met all relevant criteria of regulation Env-Ws 455.02. It is contrary to the Federal Clean Water Act (33 U.S.C. §1251 et seq.), the New Hampshire Water Pollution and Waste Disposal Act (RSA 485-A) and the Department's own rules (Env-Ws 455), contrary to the public interest, and arbitrary and capricious, to issue a Certification for this Project without giving full consideration to all of these issues. Accordingly, we urge the Council and the Department to withdraw the Certification, reconsider the Department's decision, require the Applicant to submit all relevant information regarding gasoline usage, storage, handling and management at the racetrack facility, and reconsider the Certification in light of all information submitted to determine what additional conditions are necessary for a Certification to meet applicable regulatory criteria, or whether a Certification is legally appropriate for this Project.

Respectfully submitted,
MOVING PARTIES

By Their Attorneys,
RATH, YOUNG AND PIGNATELLI,
Professional Association
One Capital Plaza; Post Office Box 1500
Concord, New Hampshire 03302-1500
(603) 226-2600

By: **COPY**
Sherilyn Burnett Young, Esquire
Sherilyn Burnett Young, Esquire
Andrew W. Serell, Esquire

April 21, 2005



The State of New Hampshire
Department of Environmental Services



Michael P. Nolin
Commissioner

Motorsports Holdings, LLC
Attn: John Ghiringhelli
One North Main Street
Derry, NH 03038

WATER QUALITY CERTIFICATION

In Fulfillment of

Section 401 of the United States Clean Water Act (33 U.S.C 1341)

WQC # 2004-002

Project Name: Valley Motorsports Park Project
Project Location: Tamworth, New Hampshire
Affected Waterbody: Unnamed wetlands; Unnamed tributaries to Bearcamp River, Bearcamp River
Owner/Applicant: Motorsports Holdings, LLC
One North Main Street
Derry, NH 03038

Appurtenant Permits: U.S. Army Corps of Engineers #200302257
NH DES Wetlands Bureau #2004-00377
NH DES Site Specific Program #WPS-6920

DATE OF APPROVAL: March 22, 2005

A. INTRODUCTION

Motorsports Holdings, LLC (Applicant) proposes the construction and operation of a permanent, private country club/motorsports facility on approximately 251 acres of land in Tamworth, New Hampshire. The proposed activity (Project) includes the construction and operation of a 3.1-mile long European-style road course and associated driving and country club facilities, including vehicular service and storage garages, overnight accommodations and a dining club.

This 401 Water Quality Certification (Certification) applies to the construction and operation of the preferred project layout, described in the Joint Wetland Permit Application to the Department dated March 4, 2004. This 401 Certification documents laws and regulations, determinations, and 401 Certification conditions relative to the attainment/maintenance of NH surface water quality standards including NH RSA 485-A:8 II, and NH Code of Administrative Rules Env-Ws 1700.

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DES Web site: www.des.nh.gov

B. WATER QUALITY CERTIFICATION APPROVAL

Based on the findings described in Section D and the conditions in Section E of this 401 Certification, the New Hampshire Department of Environmental Services (Department) hereby certifies, in accordance with Section 401 of the United States Clean Water Act (33 U.S.C. 1341), that this Project will comply with the applicable provisions of section 1311, 1312, 1313, 1316, and 1317 of the act, provided that the conditions defined in Section E of this 401 Certification are completed by the Applicant.

C. STATEMENT OF FACTS AND LAW

- C-1. Section 401 of the United States Clean Water Act (Title 33 U.S. Code, Chapter 26, Subchapter IV, Section 1341) states
- [a]ny applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate...that any such discharge will comply with the applicable provisions of sections 1311, 1312, 1313, 1316, and 1317 of this title.
- C-2. Clean Water Act Section 401(a) states "[n]o license or permit shall be granted until the certification required by this section has been obtained or has been waived...No license or permit shall be granted if certification has been denied by the State..."
- C-3. RSA 485-A:8 and Env-Ws 1700, Surface Water Quality Regulations, effective December 3, 1999, fulfills the requirements of Section 303 that the State of New Hampshire adopt water quality standards consistent with the provisions of the federal Clean Water Act.
- C-4. Env-Ws 1701.02 provides that the surface water quality regulations shall apply to all surface waters and to any person who causes point or nonpoint source discharge(s) of pollutants to surface waters, or who undertakes hydrologic modifications, such as dam construction or water withdrawals, or who undertakes any other activity that affects the beneficial uses or the level of water quality of surface waters.
- C-5. Env-Ws 1702.18 defines a discharge as:
- a. The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently, or otherwise; or
 - b. The placing of a pollutant in a location where the pollutant is likely to enter surface waters.
- C-6. Env-Ws 1702.39 defines pollutant as dredged spoil, solid waste, incinerator

residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.

- C-7. Env-Ws 1702.46 defines surface waters as "perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial," and waters of the United States as defined in 40 CFR 122.2.
- C-8. Env-Ws 1703.19 states that
- The surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region; and
 - Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function.
- C-9. The unnamed wetlands and unnamed tributaries to the Bearcamp River and the Bearcamp River, affected by the proposed activity, are surface waters of the state under Env-Ws 1702.46.
- C-10. The Project reviewed for this 401 Certification includes construction and operation of a 3.1-mile long paved road course, vehicular service and storage garages, guest accommodation facilities, and other appurtenances.
- C-11. The Project reviewed for this 401 Certification requires a federal wetlands permit under the federal Clean Water Act Section 404.
- C-12. The Applicant submitted an application for 401 Certification under letter dated March 22, 2004, which was received by the Department on March 23, 2004. The application materials did not include a Wetlands permit or Alteration of Terrain (Site Specific) permit approved by the Department, which are requisite permits for the 401 Certification review process by the Department. However, the application materials included copies of the Joint Wetland Permit Application dated March 4, 2004 and Site Specific Permit Application dated March 16, 2004.
- C-13. An approved Wetlands and Non-Site Specific Permit (No. 2004-00377) was issued by the Department on July 29, 2004, and an approved Alteration of Terrain permit (No. WPS-6920) was issued by the Department on September 20, 2004.
- C-14. The construction of this Project will cause the permanent alteration of or temporary impacts to Wetland Impact Area 1 through Wetland Impact Area 14, as defined in the Joint Wetland Permit Application dated March 4, 2004. The Department's Wetlands Bureau permitting process addressed the potential

impacts to jurisdictional wetlands.

C-15. The Applicant submitted water quality data for surface waters affected by the proposed activity to document the existing water quality conditions on the Project site prior to the commencement of activities such as construction or operation of the Project. The Applicant collected the data on August 26, 2004, September 1, 2004, and September 9, 2004, in accordance with a Biomonitoring and Surface Water Sampling Program plan (Plan) dated August 12, 2004 and reviewed by the Department. The plan included provisions to collect data from surface waters during two dry-weather events and two wet-weather events prior to the commencement of construction or operation of the Project. The Applicant also provided data for water temperature, dissolved oxygen concentration and saturation, turbidity, pH, conductivity, and stream flow from seven sampling stations on August 16, 2004, concomitant with the benthic macroinvertebrate community data collected on August 16, 2004.

- a. The acute NH surface water quality standard for total aluminum was not met during one dry-weather event and one wet-weather event sampled at two of the seven sampling stations. The chronic NH surface water quality standard for total aluminum was not met during all wet-weather events at all sampling stations and during dry-weather events sampled at four of the seven sampling stations.
- b. The chronic NH surface water quality standard for dissolved lead was not met during one dry-weather event sampled and one-weather event sampled at one of the seven sampling stations during one dry-weather event at one of the seven sampling stations.
- c. The Class B NH surface water quality standard for pH was not met as follows: during all wet-weather events sampled at all seven stations; during all dry-weather events sampled at four of seven stations; during two dry weather events at six of the seven sampling stations.

C-16. The Applicant submitted benthic macroinvertebrate community data for surface waters on the Project site and for the Bearcamp River upstream and downstream from the Project site to document the existing benthic macroinvertebrate communities on the Project site and in the Bearcamp River prior to the commencement of activities such as construction or operation of the Project. The data were collected by the Applicant on August 16, 2004 and in September 2004 in accordance with a Biomonitoring and Surface Water Sampling Program plan (Plan) dated August 12, 2004 and reviewed by the Department.

D. FINDINGS

- D-1. The proposed activity may result in a discharge.
- D-2. The proposed activity requires water quality certification under Section 401 of the federal Clean Water Act.
- D-3. The unnamed wetlands, unnamed tributaries to the Bearcamp River, and the

Bearcamp River are the surface waters affected by the proposed activity. The affected surface waters are Class B waterbodies; Class B New Hampshire surface water quality standards (SWQS) apply to the proposed activity.

- D-4. This Project includes the creation of approximately 45 acres of impervious surfaces, such as roadways and buildings, and the use of roadways by motorized or non-motorized vehicular traffic can cause the deposition of metals such as copper, lead, and zinc, and petroleum-based compounds such as oil and grease on impervious surfaces. Stormwater runoff can mobilize and transport metals and petroleum-based compounds from impervious surfaces. The Applicant proposed stormwater runoff treatment for the activities associated with this Project through the construction and operation of best management practices (BMPs) such as vegetated filter strips, catch basins, detention basins, and advanced treatment units (e.g., Stormceptors®). The Department's Site Specific permitting process addressed stormwater runoff management and treatment.
- D-5. Stormwater runoff resulting from construction or operation of this Project is not expected to violate surface water quality standards provided the construction of this Project is conducted in accordance with Site Specific Permit 2004-00377.
- D-6. This Project includes the creation of permanent and temporary storage areas for vehicular and non-vehicular fuels and petroleum-based compounds, including high performance motor fuel, hydraulic oil, and heating oil. The Department's Waste Management Division administers permitting processes to address fuel storage under RSA 146-A and RSA 146-C and rules adopted pursuant thereto. This Project is not expected to violate surface water quality standards provided the storage of fuels and petroleum-based compounds are permitted and conducted in accordance with requirements of the Department's Waste Management Division.
- D-7. The absence of appropriate meteorologic conditions, as defined in the Biomonitoring and Surface Water Sampling Program plan (Plan) dated August 12, 2004, which represent wet-weather for surface water quality monitoring during fall 2004, precluded the Applicant from collecting data representative of existing conditions during the second of two wet-weather sampling events proposed in the Plan. This partial data gap relative to existing conditions can reasonably be resolved by additional monitoring conducted at an appropriate time, prior to construction, in a manner acceptable to the Department.
- D-8. The protocol used by the Applicant to evaluate the benthic macroinvertebrate community data was not fully consistent with the protocols used by the Department for benthic macroinvertebrate community assessments. The resultant partial data gap can reasonably be resolved by re-evaluating the data according to the procedures used by the Department.
- D-9. Surface water monitoring is necessary during the operation of this Project to achieve the goals stated in Section E of this 401 Certification, pursuant to Section 401 of the United States Clean Water Act (Title 33 U.S. Code, Chapter

26, Subchapter IV, Section 1341(d)), which provides that

[a]ny certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations...and shall become a condition on any Federal license or permit subject to the provisions of this section.

E. WATER QUALITY CERTIFICATION CONDITIONS

- E-1. The proposed activity shall not result in a violation of Class B NH surface water quality standards.
- E-2. The Applicant shall comply with the conditions of this 401 Certification.
- E-3. The Applicant shall allow the Department to inspect the Project at any time to monitor compliance with the conditions of this 401 Certification.
- E-4. The Applicant shall consult with the Department regarding any proposed modifications to this Project or its operation that may result in a change in discharge to surface water, to determine whether this 401 Certification requires amendment.
- E-5. The Applicant shall collect surface water quality data during one wet-weather event, prior to the commencement of activities such as construction or operation of this Project, in accordance with the Biomonitoring and Surface Water Sampling Program plan dated August 12, 2004. The Applicant shall submit the water quality data to the Department within 60 days after the wet-weather sampling event.
- E-6. The Applicant shall re-evaluate, using the protocols provided by the Department, the benthic macroinvertebrate community data collected August 16, 2004 and September 2004 from the Bearcamp River, as provided in the Biomonitoring and Surface Water Sampling Program report dated January 28, 2005. The Applicant shall provide the re-evaluated results and the raw data in paper and electronic format to the Department within 30 days of issuance of this 401 Certification.
- E-7. The Applicant shall monitor the benthic macroinvertebrate communities during the second year of the collective regular intended use of the paved road course, vehicular service and storage garages, guest accommodation facilities, and other appurtenances.
 - a. The Applicant shall use the protocols and sampling locations employed during the August 16, 2004 and September 2004 benthic macroinvertebrate community surveys to collect the data.
 - b. The Applicant shall evaluate the data using the protocols provided by the Department.
 - c. The Applicant shall provide the results and the raw data in paper and electronic format to the Department within 120 days of completion of the field component of the survey.

- E-8. Additional monitoring requirements shall be determined by the Department pending the results of monitoring activities described in sections E-4 through E-6 of this 401 Certification.
- E-9. The Applicant shall prepare and submit a stormwater BMP Operations and Maintenance plan to the Department within 90 days of the date of issuance of this 401 Certification. The Applicant shall maintain logs of BMP maintenance activities which shall be made available for review by the Department upon request by the Department.
- E-10. This 401 Certification may be amended to include modified or additional conditions or monitoring requirements to ensure compliance with Class B NH surface water quality standards, when authorized by law, and after notice and opportunity for hearing.
- E-11. The applicant shall comply with all conditions included in the Department's Wetlands Bureau Permit #2004-00377 and the DES Site Specific Permit #WPS-6920, including any amendments.
- E-12. The Applicant shall comply with all requirements of the Waste Management Division for storage and handling of fuels and petroleum-based compounds.

F. APPEAL

If you are aggrieved by this decision, you may appeal the decision to the Water Council. Any appeal must be filed within 30 days of the date of this decision, and must conform to the requirements of Env-WC 200. Inquires regarding appeal procedures should be directed to Michael Sclafani, NHDES Council Appeals Clerk, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095; telephone 603-271-6072.

If you have questions regarding this Certification, please contact Paul Piszczek at (603) 271-2471.

COPY

Harry T. Stewart, P.E.
Director, Water Division

cc: Ridge Mauck, DES Site Specific Program
Fred McGarry, DES Waste Management Division
Paul Piszczek, DES Watershed Management Bureau
Craig Rennie, DES Wetlands Bureau
Michael Hicks, ACOE
Mark Kern, EPA-NE
Carl Nielsen, ESS Group
Sherry Young, Rath, Young, and Pignatelli, P.A. ✓
Tamworth Board of Selectmen
Tamworth Conservation Commission
Tamworth Planning Board



RATH, YOUNG AND PIGNATELLI

Professional Association

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SHERILYN BURNETT YOUNG
Attorney at Law
E-Mail: sby@rathlaw.com

January 26, 2005

VIA HAND DELIVERY

Mr. Paul Piszczek
New Hampshire Department of
Environmental Services
Water Division, Watershed Management Bureau
29 Hazen Drive, P.O. Box 95
Third Floor West
Concord, New Hampshire 03302-0095

**Re: Motorsports Holdings, LLC
Section 401 Water Quality Certification Application
ESS Project No. C502-007.1**

Dear Mr. Piszczek:

We write on behalf of members of Focus: Tamworth regarding the application by Motorsports Holdings, LLC ("MSH") dated March 22, 2004 for a Section 401 Water Quality Certification. Enclosed is a report prepared by the environmental engineering firm of Haley & Aldrich, Inc., demonstrating that if the Tamworth racetrack is constructed and operated as proposed, accidental releases of even small quantities of gasoline will likely cause violations of surface water quality standards for MtBE and benzene in the on-site wetlands and the Bear Camp River.

As you know, the MSH project will involve the use, storage, and likely release of racing fuel, which contains several problematic constituents, including benzene and high levels of MtBE. In particular, MtBE is highly soluble in water, migrates very rapidly in groundwater and very small quantities have the potential to contaminate rather large volumes of water. The New Hampshire Department of Environmental Services (the "Department") has recently indicated that approximately *sixty percent* of all active gas stations in the State, even with state of the art technology, have experienced releases of gasoline containing MtBE, and that these releases are a serious threat to New Hampshire's water resources. Mr. Fred McGarry of the Department, in a letter dated December 29, 2004, has validated our concerns about the risks to surface and groundwater from gasoline releases at the site. (A copy of Mr. McGarry's letter is attached to Haley & Aldrich's enclosed report.)

Contamination of water resources from small spills (for example involving automobile accidents or regular refueling) has been the cause of extensive contamination. "According to a

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report in the March 2001 Successful Farming magazine, even a minor spill of gasoline containing MtBE is a big threat to ground water supplies. In one instance, *just ten gallons of gasoline containing MtBE was spilled as a result of an automobile accident on one person's property. This single event led to MtBE contamination of the water supply for twelve families.*¹ Additionally, the Governor of the State of Maine directed a study of MtBE in Maine drinking water based on several small spills of gasoline in 1998. According to the report from this study, *one gasoline spill from an overturned car was the likely contamination of 24 domestic wells within 2,200 feet, 10 of which wells registered levels exceeding 100 ppb,*² far above the New Hampshire standard for MtBE in drinking water of 13 ppb. While these examples discuss contamination of groundwater and drinking water sources rather than surface water, they do help to illustrate the enormous impact that even very small releases of gasoline can have on water resources. Whether in surface or groundwater, MtBE dissolves and spreads rapidly, resists biodegradation, and is difficult and costly to remove.

As we have noted to you in previous correspondence, MSH will be pumping thousands of gallons of high-octane fuel every year at its on-site fueling operations. These specialty racing fuels will be used by vehicles racing on the track and can contain high levels of MTBE, up to 14% or more by volume in every gallon of gasoline.

The enclosed report demonstrates that a very minimal gasoline release from the on-site fueling operations (as little as 2 ounces) could cause contaminant levels in on-site wetlands to exceed surface water quality standards, and that releases of as little as 13 ounces of fuel could cause exceedances in the Bear Camp River. Given the thousands of gallons of fuel that MSH expects to pump every year at this facility, it is reasonably likely that accidental releases of gasoline will occur on various occasions. The enclosed computations demonstrate that a release of only a few ounces at the fueling station would cause surface water quality standards to be exceeded.

This report examines one possible release scenario; however, it is clear that there are numerous ways in which gasoline can be accidentally discharged at this project site. For example, MSH has acknowledged in its facility design that vehicle accidents on the track are not only possible, but are in fact expected. Automobile accidents on the track itself could result in releases of ten gallons or more of gasoline from a single vehicle. Gasoline also may be handled at the large planned automobile repair and maintenance facility on the site and could result in accidental discharges. In addition, gasoline may also be handled by amateur drivers, and subsequently discharged, at any of the more than 100 planned private garages ("garagemahals") to be scattered around the site, many adjacent to wetland areas. Any of these events would threaten to release MtBE and other contaminants into the environment from a variety of locations

¹ *Drinking Water and MtBE*, a brochure funded by a grant from the EPA Office of Ground Water and Drinking Water (available at <http://www.uwex.edu/farmandhome/wqpaap/pdf/mtbe.pdf>) (emphasis added).

² *The Presence of MTBE and Other Gasoline Compounds in Maine's Drinking Water - A Preliminary Report*, 1998, State of Maine Bureau of Health, et. al., (available online at www.maine.gov/dhs/ehu/wells/MTBE.PDF) (emphasis added).

Mr. Paul Pisczcek
January 26, 2005
Page 3 of 3

around the project site. The very real potential for such contamination has been demonstrated clearly in the enclosed report.

Given the high likelihood of contaminants released from the race track operations resulting in ongoing, episodic violations of surface water quality standards in violation of Env-Ws 455.02(c), we believe a Section 401 Water Quality Certification cannot lawfully be issued. We would appreciate your careful consideration of the enclosed report.

Very truly yours,
COPY
Sherilyn Young
Sherilyn Burnett Young

SBY/smw
Enclosure

cc: Mr. Michael Nolin, Commissioner, N.H. Dept. of Environmental Services
Mr. Fred McGarry, N.H. Dept. of Environmental Services
Governor John Lynch
Tamworth Conservation Commission
Tamworth Selectboard
FOCUS: Tamworth Members

I have received the above-referenced report.

Paul Pisczcek or Designee

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25 January 2005
File No. 30630-003

Sherilyn B. Young, Esq.
Rath, Young & Pignatelli, PA
One Capital Plaza
Box 1500
Concord, New Hampshire, 03301-1500

Subject: Estimate of Gasoline Release Required to Exceed Water Quality Standards
Proposed Motorsports Holding, LLC Racetrack Project
Tamworth, New Hampshire

Dear Attorney Young:

At your request, Haley & Aldrich, Inc. ("Haley & Aldrich") has evaluated the potential for surface water contamination from releases of gasoline during the operation of the proposed Motorsports Holdings, LLC racetrack facility. In particular, we have performed a simple conceptual model of the volume of gasoline (both retail and racing blends) that could reasonably be expected to cause surface water quality standards to be exceeded. You have asked us to perform this evaluation to address concerns that releases of gasoline during the fueling of racing vehicles on the proposed racetrack site could impact surface water quality by raising levels of contaminants such as MtBE and benzene beyond applicable surface water quality standards.

BACKGROUND

In a 29 December 2004 letter to ESS Group, Inc. ("ESS"), Mr. Frederick McGarry of the New Hampshire Department of Environmental Services ("NHDES") noted that spillage could occur at the proposed concrete fueling area. The letter (attached here as Appendix A) also stated that storm runoff from the fueling area would "...pass through a stormwater treatment catch basin." Although not stated in the NHDES letter, plans submitted with the Motorsports Holdings Wetlands and Site Specific Permit Applications indicate that the water flowing through the proposed stormwater runoff and catch basin system will discharge directly into nearby surface water bodies. The NHDES letter also indicates that outlet hoods intended to catch and retain oil and grease from entering catch basins "...are ineffective in containing MtBE...." We note that these outlet hoods are also ineffective in containing benzene, another component of gasoline.

METHODOLOGY

We have undertaken a conceptual analysis of the potential for these gasoline components to enter and contaminate surface water. To do this, we have selected a reasonably likely gasoline release scenario, and have conservatively estimated and assumed certain facts to

arrive at our professional opinion. The methodology used in the evaluation is summarized below and the supporting calculations are attached.

We have reviewed Motorsports Holdings' permit applications and plans and have determined that there are several potential scenarios in which gasoline is likely to be spilled or accidentally released. We then selected one such scenario relating to the concerns raised in the NHDES 29 December 2004 letter. Paddock Area A (or Main Paddock) is the fueling area referred to in the NHDES letter. As proposed in the permit applications, the fueling area will be directly connected to stormwater Detention Basin #3 by a storm drain. As noted above, the Motorsports Holdings plans indicate that the flows into Detention Basin #3 will be discharged into the adjacent on-site wetlands, which ultimately flow to the Bear Camp River to the north of the project site.

Accordingly, we considered what might happen to those adjacent wetlands and to the Bear Camp River if there were a gasoline release into Detention Basin #3 from the fueling area on Paddock Area A. We assumed that this released gasoline would be carried into stormwater Detention Basin #3 and initially diluted by runoff entering the basin. As noted above, the outlet hoods on the basin would not contain the dissolved MtBE and benzene or other components in the gasoline. The basin would then discharge through an outfall into the adjacent wetlands and be mixed with the surface water, ultimately flowing to the Bear Camp River. We used a simple steady-state mass balance equation to evaluate these impacts. Dispersion or attenuation of the gasoline was not considered in this evaluation.

In our analysis, we used the 2-year storm as the runoff event diluting the fuel release within the basin and conveying it to surface water. The 2-year storm runoff event was selected for two reasons. First, ESS used the same model as the basis of its stormwater treatment design for the proposed project in the permit applications. Second, this event has a 50% chance of occurring on any day of any year, and is thus a reasonable model to use for a project that is to operate for many years.

The two contaminants addressed in our analysis are methyl tertiary butyl ether (MtBE) and benzene. Benzene content of retail gasoline ranges between 1 to 5% by volume and 5% by volume in some racing gasoline formulations. MtBE content in retail gasoline has been found to be as high as 11% (NHDES letter referenced above) and 30% in some racing blends. Neither MtBE nor benzene will be effectively contained by the outlet hoods proposed to be used on the stormwater catch basins. The NHDES Surface Water Quality Regulations for benzene (1.2 ug/l) and Maximum Contaminant Limits, Drinking Water Program (NHDES, 2004) standards for methyl tertiary butyl ether (MtBE (13 ug/l) were used in this evaluation because these are the most conservative applicable standards for the surface waters at issue.

A summary of our calculations are included with this letter as Appendix B and demonstrate the process through which we evaluated the potential for contamination. The results of our evaluation are presented on Table 1, also attached.

CONCLUSIONS:


Based upon the evaluations described above and the attached calculations:


1. If as little as 2.0 ounces of racing gasoline are released into Detention Basin #3, the NHDES Drinking Water Standards for MtBE would be exceeded in the adjacent wetlands.
2. If as little as 13 ounces of racing gasoline are released into Detention Basin #3, the NHDES Drinking Water Standards for MtBE would be exceeded in the Bear Camp River.
3. If as little as 2.0 ounces of racing gasoline or high octane "retail" gasoline are released into Detention Basin #3, the NHDES Surface Water Quality Regulations for benzene would be exceeded in the adjacent wetlands.
4. If as little as 12.4 ounces of racing or high octane retail gasoline are released into Basin #3, the NHDES Surface Water Quality Regulations for benzene would be violated in the Bear Camp River.

The intent of these evaluations is to quantify the minimal volume of gasoline releases that would cause contaminant levels in nearby wetlands and the Bear Camp River to exceed surface water quality standards. Given the very small volumes calculated herein, it is reasonable to expect that if the proposed race track is constructed and operated, fueling in the paddock (likely involving tens or hundreds of gallons of gasoline per day) will likely result in water quality exceedances in surface waters in the on-site wetlands and the Bear Camp River (and potentially other off-site wetlands) due to accidental releases of gasoline.

A summary of the calculations, data sources and references are attached. Please feel free to contact us at 603.625.5353 if you have questions or wish to discuss.

Sincerely yours,
HALEY & ALDRICH, INC.


James K. Barrett, P.E.
Project Manager


Muriel A. Robinette, P.G.
Senior Vice President

Enclosures:

- Appendix A NHDES Correspondence
- Appendix B References and Calculations

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**HALEY &
ALDRICH**

**TABLE 1
GASOLINE RELEASE VOLUME REQUIRED TO EXCEED STANDARDS
PROPOSED VALLEY MOTORSPORTS PROJECT
TAMMORTH, NEW HAMPSHIRE**

FUEL TYPE	CONSTITUENT	RECEIVING SURFACE WATER BODY			
		WETLANDS		BEAR CAMP RIVER	
		Surface Water Criteria ¹	Drinking Water Standards ²	Surface Water Criteria ¹	Drinking Water Standards ²
RACING FUEL	BENZENE	2.0 Ounces	8.3 Ounces	12.4 Ounces	53 Ounces
	MTBE	NS	2.0 Ounces	NS	13 Ounces
RETAIL FUEL	BENZENE	2.0 to 15.2 Ounces ³	8.3 to 63 Ounces ³	12.4 to 88 ounces ³	53 to 374 ounces ³
	MTBE	NS	6.0 Ounces	NS	33 Ounces

1: NHDES 1999; 1.2 ug/l Benzene, ingestion of fish and surface water regulations. No MTBE criteria.

2: NHDES, 2004; 5.0 ug/l benzene, 13 ug/l MTBE, drinking water standards.

3: Benzene content varies.

NS = No Standard.



The State of New Hampshire
Department of Environmental Services

Michael P. Nolin
Commissioner



December 29, 2004

Mr. Craig Lizotte, P.E.
Senior Project Manager, Land Development Services
ESS Group, Inc.
888 Worcester Street
Wellesley, MA 02482

Re: Tamworth - Proposed Valley Motorsport Park, Route 25

Dear Mr. Lizotte:

The Department of Environmental Services (Department) has received a letter from Attorney Sherilyn Young, representing FOCUS: Tamworth. A copy of the letter is attached for your information. The letter raises concerns regarding possible groundwater contamination resulting from spillage of gasoline containing methyl tertiary butyl ether (MtBE) at the proposed Valley Motorsport Park.

MtBE has become a major groundwater contaminant in New Hampshire. The Department has observed a steadily increasing number of public and private water supplies with some levels of MtBE present in those supplies. In 2003, 15.7% of the public water supplies state-wide have had some level of MtBE present. Based on reported results from public water supplies to date in 2004, we expect the percentage of affected wells to equal or exceed the 2003 number. As a result of these findings and the continuing if not expanding extent of contaminated wells, the Department is concerned with MtBE contamination of groundwater and with prevention of further MtBE releases.

The vehicles which will be using the Valley Motorsport Park will likely be burning gasoline containing some level of MtBE. We have reviewed the plans of the project to identify areas and activities where gasoline could be spilled, possibly resulting in MtBE contamination. The following comments discuss issues resulting from this review:

1. None of the documents we have reviewed discussed the type of gasoline to be used, specifically the octane rating. Typically, the higher the octane rating of the gasoline, the higher the volume of MtBE the gasoline might contain. The Department has observed gasoline distributed in the state with an octane of 93 and an MtBE content of 12.3%, by volume. The State of Maine has reported 93 octane gasoline with as high as 14.5% MtBE volume. Please provide available information regarding the specifications for the gasoline that might be dispensed at this facility.
2. The plans identify a concrete fueling area located north and west of "Road A". It is our understanding that gasoline would be dispensed in this area and that spillage could occur. The plan shows the pad graded to a catch basin in the northwesterly corner of the pad. Runoff flow from the catch basin would pass through a stormwater treatment catch basin, identified as a Stormceptor on the plan. The grading plans show that the pad would receive runoff from the area between the pad and the "Pit lane units". Based on our telephone conversation of December 10, Valley Motorsports will submit an application for an aboveground storage tank to be located on or adjacent to the fueling pad. However, lacking the application at this time, please describe the

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
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DES Web site: www.des.nh.gov

fueling activities that would occur on this pad and how gasoline would be stored on and dispensed from the pad.

New rules for underground storage tanks call for site grading to direct surface runoff away from refueling pads to prevent such runoff from becoming contaminated by any spilled gasoline. The plan should be revised to prevent runoff from areas upgradient of the pad from flowing onto the pad and through the fueling area.

3. The plans show 19 "pit lane units" which are also identified as garage/condos. Please describe what these units will be used for and if such units might store gasoline.
4. The plans show 26 15' by 25' "pit areas". Please describe the activities that might take place in the pit areas, particularly if any refueling would occur or if refueling would be prohibited from these areas.
5. The standard details show a "Stormceptor" unit, in cross section, that is designed to collect sediment and, according to the plan, oil and grease. Please provide a plan view of the unit including the overflow weir. The information shown on the plan does not fully describe how the unit will function nor how it will collect oil, grease and other floating materials.
6. The standard details generally show all catch basins with hoods on the outlets, intended to catch and retain oil and grease. MtBE is highly soluble, 28 times that of benzene, and will dissolve in the water passing through the catch basin and be carried into the drainage system. Consequently, outlet hoods are ineffective in containing MtBE.
7. Ms. Young's letter also raised concerns regarding accidents that could occur on the race track and the accompanying spillage of gasoline that might occur. Please describe the plans for dealing with gasoline spills resulting from vehicle accidents on the track.

Answers to these issues will be necessary before the Department can fully address the concerns raised in Ms. Young's letter. It should be noted that prohibition from this facility of gasoline containing MtBE or any of the other ether oxygenates would address many of the comments listed above. Should you have any questions regarding these issues, please feel free to contact me by phone at 603-271-4978 or by e-mail at fmcgarry@des.state.nh.us.

COPY
Frederick J. McGarry, P.E., DEE
Assistant Director

FJM/ama
F:\McGarry\2004\Valley Motorsport.doc

cc: Ms. Sherilyn Burnett Young, Esq.
Robert W. Varney, Administrator, EPA Region I
Michael P. Nolin, Commissioner
Anthony Giunta, P.G., Director
Greg Comstock, P.E., Water Shed Bureau
Health Officer, Town of Tamworth
Susan Duprey, Esq., Devine, Millimet Law Offices

APPENDIX B

References and Calculations

APPENDIX B

Estimate of Gasoline Release Required to Exceed Water Quality Standards Motorsports Holdings, LLC Proposed Racetrack Project

REFERENCES AND CALCULATIONS

References:

- A. Valley Motorsports Park Project, Site Specific Permit Application Drawings 3 Sept. 04.
- B. Surface Water Quality Regulations Chapter 1700, NHDES, 10 December 1999.
- C. Maximum Contaminant Limits, Drinking Water Program, NHDES, 3 May 04.
- D. Monthly Streamflow Statistics For New Hampshire, Bear Camp River at South Tamworth, NH USGS 01064807, USGS (attachment 1) <http://nwis.waterdata.usgs.gov> 17 Jan. 05
- E. "Leaking USTs" Joe Ryan, Ph.D., University of Colorado
<http://bcn.boulder.co.us/basin/waterworks/lust.html> (attachment 2).
- F. "MSDS, Sunoco GT Plus With Ethenol" 4 June 03 (attachment 3).
- G. "MSDS, Phillips Unleaded Plus Reformulated Gasoline" 7 Dec 04 (attachment 4)
- H. "MSDS, Sprague Gasoline" 22 June 02 (attachment 5)
- I. Letter from F McGary, Asst. Comm. NHDES to C. Lizotte, Project Manager ESS, 29 December 04.

Problem Statement

Reference A, Detention Basin 3 receives runoff from Paddock 1 (Main Paddock) which is used for vehicle fueling (retain & racing blends) and discharges to adjacent wetland and then to the Bear Camp River (see attachment 1). Detention Basis 2 also discharges to the same wetland and the Bear Camp River.

2-year, 24-Hour Duration Runoff Statistics		
Basin #	Peak Storage	Peak Discharge
2	41,780 ft ³	0.64 cfs
3	36,215 ft ³	05.6 cfs

Procedure

Use Mass Balance Equation to determine fuel release volume that causes Wetland and Bear Camp River water quality standards to be exceeded.

Mass Balance Equation For Wetland:

$$\frac{Q_3 C_3 + Q_2 C_2}{Q_3 + Q_2} = C_{\text{wetlands}} \quad \text{Eqn \#1}$$

$$\frac{Q_3 C_3 + Q_2 C_2 + Q_R C_R}{Q_3 + Q_2 + Q_R} = C_{\text{Bear Camp R}} \quad \text{Eqn \#2}$$

Where:

- Q_3 = peak discharge from Basin #3 (2 yr, 24-hr)
- Q_2 = peak discharge from Basin #2 (2 yr, 24-hr)
- Q_R = discharge in Bear Camp River
- C_3 = concentration of contaminant in Basin #3 required to exceed standard
- C_2 = concentration of contaminant in Basin #2 ($C_2=0$ no fuel input assumed)
- C_{wetlands} = concentration that exceeds standard in wetlands
- $C_{\text{Bear Camp River}}$ = concentration that exceeds standard in river

From Eqn \#1 and $C_2 = 0$ (assumed)

$$\frac{Q_3 C_3}{Q_3 + Q_2} = C_{\text{wetlands}}$$

$$Q_3 C_3 = C_{\text{wetlands}} (Q_3 + Q_2)$$

$$C_3 = C_{\text{wetlands}} \frac{(Q_3 + Q_2)}{Q_3} \quad \text{Eqn \#3}$$

Wetlands Mass Balance

Similarly from Eqn \#2 and $C_2 = 0 + C_R = 0$ (assumed)

$$\frac{Q_3 C_3}{Q_3 + Q_2 + Q_R} = C_{\text{Bear Camp River}}$$

$$C_3 = C_{\text{Bear Camp River}} \frac{(Q_3 + Q_2 + Q_R)}{Q_3} \quad \text{Eqn \#4}$$

Bear Camp River Mass Balance

To solve equations #3 & #4, determine standards for Benzene & MtBE, gasoline constituents with the strictest water quality standards.

APPENDIX B

Estimate of Gasoline Release Required to Exceed Water Quality Standards
Motorsports Holdings, LLC Proposed Racetrack Project

REFERENCES AND CALCULATIONS

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$$\frac{Q_3 C_3 + Q_2 C_2 + Q_R C_R}{Q_3 + Q_2 + Q_R} = C_{\text{Bear Camp R}} \quad \text{Eqn \#2}$$

Where:

Q_3 = peak discharge from Basin #3 (2 yr, 24-hr)

Q_2 = peak discharge from Basin #2 (2 yr, 24-hr)

Q_R = discharge in Bear Camp River

C_3 = concentration of contaminant in Basin #3 required to exceed standard

C_2 = concentration of contaminant in Basin #2 ($C_2=0$ no fuel input assumed)

C_{wetlands} = concentration that exceeds standard in wetlands

$C_{\text{Bear Camp River}}$ = concentration that exceeds standard in river

From Eqn \#1 and $C_2 = 0$ (assumed)

$$\frac{Q_3 C_3}{Q_3 + Q_2} = C_{\text{wetlands}}$$

$$Q_3 C_3 = C_{\text{wetlands}} (Q_3 + Q_2)$$

$$C_3 = C_{\text{wetlands}} \frac{(Q_3 + Q_2)}{Q_3} \quad \text{Eqn \#3}$$

Wetlands Mass Balance

Similarly from Eqn \#2 and $C_2 = 0 + C_R = 0$ (assumed)

$$\frac{Q_3 C_3}{Q_3 + Q_2 + Q_R} = C_{\text{Bear Camp River}}$$

$$C_3 = C_{\text{Bear Camp River}} \frac{(Q_3 + Q_2 + Q_R)}{Q_3} \quad \text{Eqn \#4}$$

Bear Camp River Mass Balance

To solve equations #3 & #4, determine standards for Benzene & MtBE, gasoline constituents with the strictest water quality standards.

Component	Standard	
	Water Quality Regulations Ref B	NHDES Drinking Water Standard Ref C
Benzene	1.2 ug/l	5.0 ug/l
MBTE	NS	13.0 ug/l

Notes:

1: Ingestion of fish & surface water

2: Drinking water standard

NS: No standard

Determination of 2-yr of Bear Camp River, Q_R using Ref D See below

24-hour discharge is equal to the 50% probability discharge which is 30.0 cfs

BEAR CAMP RIVER AUGUST MONTHLY MEAN FLOW STATISTICS

RANK	YEAR	Bear Camp R August Q's* Cfs	m/(n+1) %
1	2002	4.6	8.33
2	2001	6.7	16.67
3	1995	18.9	25.00
4	1999	19.9	33.33
5	1996	25.9	41.67
6	2000	30.0	50.00
7	1994	34.2	58.33
8	1998	39.0	66.67
9	1993	52.5	75.00
10	1997	91.0	83.33
11	2003	191.0	91.67

AVERAGE = 46.7

*Discharge (Q) data from: Monthly Streamflow Statistics for New Hampshire, Reference D

Determine the amount of benzene and MtBE in retail & racing fuels (mass fraction) (see following pages)

From Attachment 2 reference E, average gasoline has a density of 0.805 grams per milliliter = 805 grams per liter and the following mass fraction for Benzene

Benzene Mass Fraction = 0.0076 ← retail fuel

Based on component ranges in Reference E and amounts in retail gas Reference E use the following blend for racing fuel

Component	Density (g/ml)	Volume %	Mass (Density X Volume)	Mass Fraction *
Light petrol distillate	0.74	37.7	0.279	0.349
Xylene	0.86	10	0.086	0.108
Toluene	0.87	20	0.174	0.218
Ethyl alcohol	0.77	13	0.100	0.125
Tert butyl alcohol	0.79	5 ^a	0.090	0.05
Cyclohexane	0.78	0	0	0
1, 2, 4- trimethyl benzene	0.89	4 ²	0.036	0.045
N-hexene	0.66	3 ²	0.020	0.025
Benzene	0.88	4.9	0.043	0.054**
2,6-di tert butylphenol	0.88	1.4	0.012	0.015
Cumene	.90	1.0 ^a	0.009	0.011
		Total =	0.799	1.000*

Notes:

a=assumed from Ref F

1=0 in fresh gas (Ref E)

2=amount in fresh gas (Ref E)

*Mass fraction= Sum of component mass÷0.799

**Some retail fuel (Sunoco GT w ethanol) has same benzene content as this racing fuel.

Use reference G Racing Fuel w/MtBE

Component	Density (g/ml)	Volume %	Mass (Density X Volume)	Mass Fraction *
Light petroleum distillate	0.74	39.88	0.295	0.378
MtBE	0.74	30.00	0.222	0.285 ←
Toluene	0.87	30.00	0.261	0.334
Tetraethyl lead	1.7	0.12	0.002	0.003
		Total =	0.780	1.000*

Mass Fraction=Sum of component mass÷0.780

Use reference H Retail Fuel w/MtBE

Component	Density (g/ml)	Volume %	Mass (Density X Volume)	Mass Fraction*
Benzene	0.88	2.0	0.018	0.022
Petroleum Distillate	0.74	42.0	0.311	0.390
Cumene	0.90	0	0	0
Ethyl Benzene	0.867	0 ¹	0	0
Toluene	0.87	20	0.174	0.218
Xylene	0.86	15	0.129	0.162
Naphthalene	0.997	0	0	0
Cyclohexane		0	0	0
O hexane		0	0	0
Trimethyl benzene	0.89	4 ²	0.036	0.045
Butene	0.58	0	0	0
Pentene	0.70	0 ¹	0	0
Tertial Butyl Alcohol	0.79	5	0.040	0.050
MtBE	0.74	12 ³	0.089 ³	0.111←
		Total =	0.797	1.00*

Notes:

1=0 in fresh gas

2=amount in fresh gas ref E

3=Ref I DES 29 Dec 04 letter

*Mass Fraction = (Sum of Components Mass) ÷ 797

Summary of Mass Fractions

Retail Fuel

Benzene 0.0076 to 0.054
MTBE 0.111

Racing Fuel

Benzene 0.054
MTBE 0.285

Summary of Discharges

Basin #2 0.64 cfs, Q₂
Basin #3 5.6 cfs, Q₃
Bear Camp River 30.0 cfs, Q_R

Summary of Standards		
	NHDES Regulations Water	NHDES Drinking Water
Benzene	1.2ug/l	5.0 ug/l
MtBE	NS	13.0 ug/l

MASS BALANCE EQUATION CALCULATIONS

Wetlands

Retail Gasoline: Benzene

$$C_3 = C_{\text{wetlands}} \frac{(Q_3 + Q_2)}{(Q_3)} \quad \text{Eqn \#3}$$

Standard for water quality regulations = 1.2ug/l
 Use 2.4 ug/l as conservative estimate

$$C_3 = 2.4 \frac{(5.6 + .64)}{(5.6)} = 2.7 \text{ ug/l}$$

∴ Benzene concentration of 2.7 ug/l in Detention Pond #3 would cause concentration in wetlands to be twice the standard

Determine volume of gasoline to exceed benzene standard

$$\text{Volume Basin \#3} = 36,215 \text{ ft}^3 \\
(36,215 \text{ ft}^3) (28.317 \text{ l/ft}^3) = 1,025,500 \text{ liters}$$

$$(1,025,500 \text{ liters}) (2.7 \text{ ug/l}) = 2,768,850 \text{ ug benzene} = 2.769 \text{ gm benzene} \\
\text{Mass fraction benzene} = 0.0076 - 0.054$$

$$(2.769 \text{ gm benzene}) \div 0.0076 \text{ gm/l gasoline} = 364 \text{ gm gasoline}$$

$$\text{Gasoline density} = 805 \text{ grams/liter} \\
364 \text{ g gasoline} / 805 \text{ g/l} = 0.45 \text{ liters gasoline} \\
(0.45 \text{ l gasoline}) (0.264 \text{ gal/l}) = 0.119 \text{ gallon gas} \\
(0.119 \text{ gallon}) (128 \text{ oz/gal}) = 15.2 \text{ ounces gasoline}$$

Note: This result is for 0.0076 mass fraction benzene, for 0.054 mass fraction, result is

$$(15.2 \text{ ounces gas}) \frac{(0.0076)}{(0.054)} = 2.1 \sim 2.0 \text{ ounces gas}$$

∴ Retail gas volume to exceed water quality regulations in Wetlands: 2.0-15.2 ounces

Retail gasoline to exceed drinking water criteria in wetlands benzene

Standard is 5 ug/l, use double or 10 ug/l

Above results were for value of 2.4 ug/l

∴ (2-15.2 ounces) $(^{10}/2.4) = 8.3$ to 63 ounces

∴ 8.3-63 ounces retail gas volume required to exceed benzene drinking water standards in wetland

Retail Gas: MtBE

$$C_3 = C_{\text{standard}} \frac{(Q_3 + Q_2)}{Q_3} \quad \text{Eqn 3}$$

No water quality regulations standard for MtBE

Drinking water criteria = 13.0 ug/l

Use 13.0 for (wetland standard) MtBE not as volatile as benzene & not readily absorbed by soil, etc.

$$C_3 = 13 \frac{(5.6 + 0.64)}{(5.6)} = 14.5 \text{ ug/l}$$

Determine volume of gas required to exceed MtBE standard

Volume Basin #3 = 1,025,500 l

(1,025,500 l) (14.5 ug/l) = 14,869,750 = 14.87 g MtBE

Mass fraction MTBE in retail gas = .111

14.87 gm MtBE ÷ .111/gasoline = 134 gm gasoline

Gasoline density = 805 gm/l

∴ 134 gm ÷ 805 gm/l = 0.17 l gasoline

(0.17 l) (0.264 gal/l) = 0.045 gallons = 5.7 oz.

∴ Volume retail gas released >MtBE Standard ~ 6 ounces

Racing Gasoline: Benzene

Benzene: Mass fraction = 0.054 which is the same value analyzed previously

∴ Racing gas volume required to exceed quality criteria benzene in wetlands: 2.0 ounces

MtBE Mass fraction = 0.285

Note previously calculated volume to exceed standards via retail fuel spill with mass fraction of 0.111 MtBE

From above, Volume = 0.045 gallons = 5.7 ounces

$(0.045 \text{ gallons}) \frac{.111}{0.285} = 0.018 \text{ gallons} = 2.2 \text{ ounces}$

Racing gas volume to exceed MtBE drinking standard in wetlands = 2 ounces

∴ Racing gas volume to exceed benzene drinking water standards = 8.3 oz.
(calculated previously)

MASS BALANCE EQUATION CALCULATIONS

Bear Camp River

Note: Retail Gas: MtBE

No water quality regulations for MtBE

Drinking water standard = 13.0 ug/l

Retail Gasoline: Benzene

$$C_3 = C_{\text{stand}} \frac{(Q_3 + Q_2 + Q_1)}{Q_3} \quad \text{Eqn \#4}$$

Standard for water quality regulations is 1.2 ug/l use 2.4 ug/l as a conservative estimate

$$C_3 = 2.4 \frac{(5.6 + 0.64 + 30)}{5.6} = 15.5 \text{ ug/l}$$

Volume Basin #3 = 1,025,500 l

$(1,025,500 \text{ l}) (15.5 \text{ ug/l}) = 15,895,250 \text{ ug} = 15.9 \text{ gm benzene}$

Mass fraction benzene = 0.0076 to 0.054

$(15.9 \text{ g benzene}) \div .0076 = 2,092 \text{ g gasoline}$

$(2,092 \text{ g}) \div 805 \text{ g/l} = 2.6 \text{ l gasoline}$

$(2.6 \text{ l}) (0.264 \text{ gal/l}) = 0.7 \text{ gallons}$

= 88 ounces for 0.0076 m fraction benzene. For 0.054 Mass fraction benzene values become 0.366 l
=.10 gallons = 12.4 ounces

\therefore Retail gasoline volume required to exceed benzene water quality criteria in river:
.1 gallons (12.4 oz) to 0.7 gallons (88 Oz)

Retail gasoline volume required to exceed drinking water standards in Bear Camp River.

Use double 5 ug/l standard or 10 ug/l previous results were for 2.4 ug/l

$10/2.4 = 4.17$

$[0.10 \text{ gallons (12.4 oz) to } 0.7 \text{ gallons (88 oz)}] \times 4.17 =$

\therefore 0.4 gallons (53 oz) to 3 gallons (374 oz) of retail gas to exceed benzene drinking water standards in Bear Camp River

Retail Gas: MtBE

$C_3 = 13 \frac{(5.6 + 0.64 + 30)}{5.6} = 84 \text{ ug/l}$

Basin #3 Volume = 1,025,500 l

$(1,025,500 \text{ l}) (84 \text{ ug/l}) = 86,142,000 \text{ ug MtBE}$

= 86.1 g MtBE

MtBE Mass fraction in retail gas = .111

$86.1 \text{ g MtBE} \div .111 = 775.7 \text{ g gasoline}$

$775.7 \text{ g} \div 805 \text{ g/l} = 0.96 \text{ l gasoline}$

$(0.96 \text{ l}) (0.264 \text{ gal/l}) = 0.25 \text{ gal} = 33 \text{ ounces}$

\therefore Volume retail gas released to exceed MtBE drinking water standard in river = 33 ounces

Racing Gas: MtBE

Racing gas volume required to exceed benzene water quality criteria = 12.4 oz
Drinking water standards = 53 oz

MtBE mass fraction = 0.285

Note: Previously calculated retail gas @ MF = .111

From above $(0.25 \text{ gal}) \left(\frac{.111}{0.285} \right) = 0.097 \text{ gallons}$

= 12.5 ounces MtBE

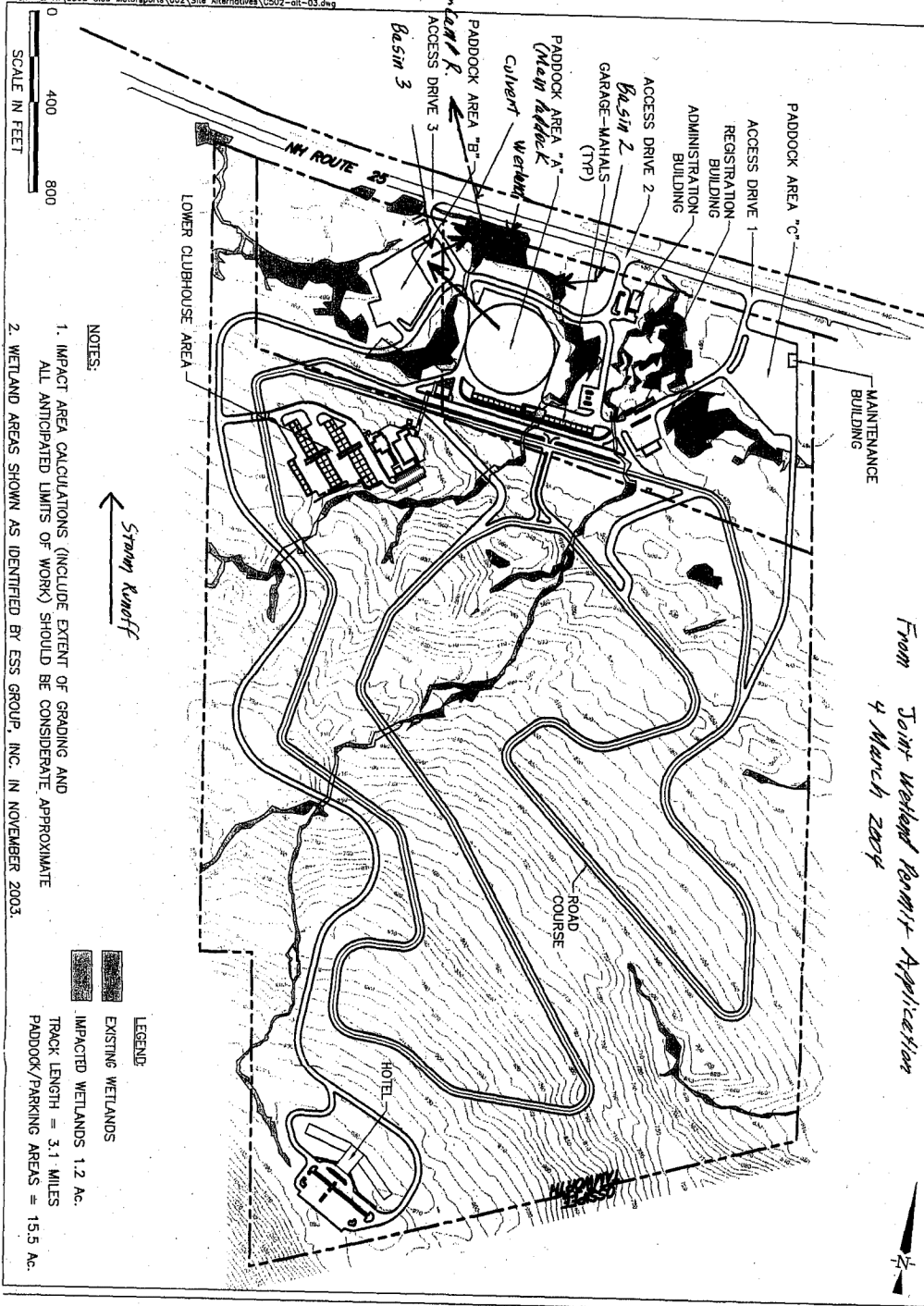
Gasoline Release Volume Required to Exceed Standards¹

Fuel Type	Constituent	Wetland		Bear Camp River	
		Surface Water Regulations	Drinking Water Standards	Surface Water Regulations	Drinking Water Standards
Racing Fuel	Benzene	2.0 oz	8.3 oz	12.4 oz	53 oz
	MtBE	NS	2.0 oz	NS	13 oz
Retail Fuel	Benzene ²	2.0-15.2 oz	8.3-63 oz	12.4-88 oz	52-374 oz
	MtBE	NS	6.0 oz	NS	33 oz

GA-PROJECTS\30-30630\003\Gas Release\Gas Calcstestl.doc

¹ NHDES Surface Water Regulations: 1.2 ug/l benzene, ingestion of fish and water.
NHDES drinking water standard: 5.0 ug/l benzene, 13 ug/l MtBE.

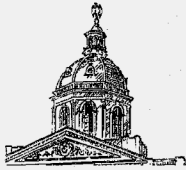
² Benzene mass fraction ranges from 1.0 - 5.0% depending upon brand, formulation and octane rating.



From Joint Wetland Permit Application
 4 March 2004

SITE PLAN - ALTERNATIVE 3

Figure 7-3



RATH, YOUNG AND PIGNATELLI

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SHERILYN BURNETT YOUNG
Attorney at Law
E-Mail: sby@rathlaw.com

November 19, 2004

VIA FIRST CLASS MAIL

New Hampshire Department of Environmental Services
Water Division, Watershed Management Bureau
29 Hazen Drive, P.O. Box 95
Third Floor West
Concord, New Hampshire 03302-0095

**Re: Motorsports Holdings, LLC
Section 401 Water Quality Certification Application
ESS Project No. C502-007.1**

Dear Mr. Piszczek:

I write on behalf of members of Focus: Tamworth regarding the application by Motorsports Holdings, LLC ("MSH") dated March 22, 2004 for a Section 401 Water Quality Certification. I have enclosed several recent articles appearing in various New Hampshire newspapers which underscore our deep concerns regarding the serious potential for MtBE contamination of the Ossipee Aquifer from the proposed Tamworth racetrack.

The MSH project will involve the use, storage, and likely release of racing fuel, which contains unregulated levels of MtBE. As you can see from the enclosed articles (and as mentioned in our comments of August 13, 2004), MtBE presents a very real threat to the water resources in our State. Representatives of MSH have, in the past, argued that their project presents no more of a threat than the gas stations and other businesses that already exist in the area. However, this argument ignores several pertinent issues relevant to the MSH project.

At a recent conference on Brownfields redevelopment, representatives of the New Hampshire Department of Environmental Services indicated that approximately *sixty percent* of all active gas stations in the State have experienced releases of gasoline containing MtBE, and that these releases are a serious threat to New Hampshire's drinking water supplies. As we have noted in our earlier comments, MSH will be pumping thousands of gallons of high-octane fuel every year. These specialty racing fuels will be used by vehicles racing on the track and contain high levels of MTBE, up to 14% or more by volume in every gallon of gasoline. MSH fully expects that many of these cars and motorcycles will crash, as evidenced by the design of the track, which includes high-speed corners, deceleration zones and crash barriers. These crashes will lead to spills of fuel and other automotive fluids (for which MSH has failed to provide an adequate spill prevention, control and countermeasure plan). Spills will be directed to vegetated areas without secondary containment; these materials will then enter the groundwater and will

COUNSELLORS AT LAW

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www.rathlaw.com

Mr. Paul Piszczek
November 19, 2004
Page 2

present a direct threat to the Ossipee Aquifer, which is the primary drinking water source for communities from Tamworth to Saco, Maine.

The fact that MtBE is already present in some of our State's water resources does not change the fact that, under the Clean Water Act, the Watershed Management Division is charged with ensuring that each *new* project meets all requirements before a Section 401 Water Quality Certification is issued. The presence of contamination from other sources is irrelevant under the Act, the purpose of which is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." 33 U.S.C. §1251(a). Quite simply, without a compelling public need for this racetrack (which does not exist), there is no rational basis for permitting what will be a certain source of MtBE contamination in the Ossipee Aquifer.

over 20 years,
Sherilyn
COPY
Sherilyn Burnett Young

Enclosure

cc: FOCUS: Tamworth Members
Mr. Robert Varney, Administrator, EPA Region I
Mr. Fred McGarry, N.H. Dept. of Environmental Services
Mr. Michael Hicks, United States Army Corps of Engineers
Governor-Elect John Lynch



BOB LAFREUNION LEADER

Paola Moral, 3, gets a professional make-up treatment from Kriss Soterion of Kriss Cosmetics, who volunteered her services for the annual Halloween party at the Easter Seals Child Development Center in Manchester yesterday. The Merchants Automotive Group is in its seventh year sponsoring the party that included several of their employees in costume and a performance by magician Steve Thomas.

MTBE shows up often in wells

◆ **Study in Rockingham County:** Gasoline additive found often in deep drilled wells.

DOVER (AP) — Scientists in Rockingham County have detected higher concentrations of the gasoline additive MTBE hundreds of feet below the surface than in shallow wells.

The scientists have differences of opinion as to how serious the problem is, but with a few exceptions, the deeper the well, the more MTBE was found, although in very small concentrations.

"It was very surprising, we did expect to see a correlation, but not a positive one," said Joseph Ayotte, hydrologist at the U.S. Geological Survey, who conducted the study of public and private wells in southeast New Hampshire.

The study focused on Rockingham County — the most densely populated area in the state — where a dwindling water supply has forced communities to drill deeper and

deeper bedrock for public supply wells.

Rockingham also is a county where an unusually large number of residents — 75 percent — get their drinking water from groundwater. About 25 percent use public wells as their primary water source.

Researchers sampled water flowing into the well from 103 private and 120 public wells for the gasoline oxygenate methyl tertiary-butyl ether, which was added to combat air pollution following the Clean Air Act in 1990.

Bruce Bauman, soil and groundwater research coordinator at the American Petroleum Institute, found the finding "curious." Rockingham County, he said, might represent a "worst-case scenario" as the groundwater system is intersected by fractured bedrock, more susceptible to contaminants than other areas.

But Bauman feels that New Hampshire wells face a far greater threat from arsenic and radon, which unlike MTBE, will not disappear over time.

Ayotte said the study "found no apparent correlation whatsoever" between depth and MTBE in private wells.

"The high rate of detection of MTBE is the bad news," said Ayotte as he summarized a presentation of the study at a recent conference on soils, sediments and water at the University of Massachusetts in Amherst.

"The good news is the low concentration. But unfortunately there is more bad news — the wells in Rockingham County are increasingly being drilled deeper in search of adequate supply and it may have implications for the contamination of future wells," Ayotte said.

Depending on the outcome of a new statewide study on MTBE by the U.S. Geological Survey, the state may change the guidelines for well drilling to encourage contractors to look for shallow wells at other locations rather than to keep drilling for hundreds of feet. Deeper wells generally yield less water. Ayotte said this is a possible explanation for the higher concentrations of MTBE.

Newmarket, 5:57 p.m.
North Hampton, 6:47 p.m.
Portsmouth, 5:30-8 p.m.
Rochester, dusk to 8 p.m.
Rye, 5-7 p.m.
Sandown, 5-8 p.m.
Seabrook, 5:30-7:30 p.m.
Somersworth, 6-8 p.m.
Stratham, 5-7 p.m.
Oct. 31, Sunday
Allenstown, 4-7 p.m.
Amherst, 6-8 p.m.
Attitash, 6-8 p.m.
Auburn, 1-4 p.m.
Barnstead, 4-7 p.m.
Bedford, 6-8 p.m.
Belmont, 3-7 p.m.
Bow, 4-8 p.m.
Bradford, little kids 4-6 p.m. and older kids 6-8 p.m.; food and games at the Community Center 5-8 p.m.
Bristol, 5-8 p.m.
Brookline, 4-6 p.m.
Candia, 4-6 p.m.
Center Harbor, 5-8 p.m.
Chester, 6-8 p.m.
Chichester, 6-8 p.m.
Claremont, 4-8 p.m.
Concord, dusk-8 p.m.
Derry, 6-7:30 p.m.
Durham, 5:30-8 p.m.
Epsom, 5-8 p.m.
Franklin, 5-8 p.m.
Gilford, 4-7 p.m.
Grafton, 5-8 p.m.
Goffstown, 5-8 p.m.
Greenfield, 6-8 p.m.
Greenville, 6-8 p.m.
Hamstead, 5-8 p.m.
Hampton, 5:30-8 p.m.
Hansville, 5:30-7:30 p.m.
Hillsborough, 5-8 p.m.
Hollis, 6-8 p.m.
Hooksett, 6-8 p.m.
Hudson, 6-8 p.m.
Jeffrey, 4:30-6 p.m., on the common 5-7 p.m.
Keene, 5:30-7:30 p.m.
Kensington, 5:30-7:30 p.m.
Kingston, 5-8 p.m.
Laconia, 5:30-8 p.m.
Lancaster, 4-7 p.m.
Lebanon, 4-8 p.m., fun fest at Coburn Park and City Hall 4-6 p.m.
Litchfield, 6-8 p.m.
Londonberry, 6-8 p.m.

Windsor, 2-6 p.m.
Wine, 2-6 p.m.
Wilson, 6-8 p.m.
Windsor, 5:30-8 p.m.
Wolfeboro, 5-7 p.m.
OTHER EVENTS
Bradford: Parks and Recreation will sponsor a party at the Bradford Area Community Center, Oct. 31, 5-8 p.m. There will be games, movies, food and judging of carved pumpkins. For information, call Jana at 938-6228.
Franconia: Lafayette Lions Club Halloween bonfire, Oct. 31, 6 p.m., on the Dow Strip.
Goffstown: Police Department Halloween Safety Day, Oct. 30, noon-4 p.m.; Hamford parking lot, costume contest and free balloons and necktie glow sticks.
Hamover: Kids Costume Carnival for ages 1-6, Oct. 30, 4:30-6 p.m.; Richard W. Black Community Center, 48 Lebanon St., 55 per adult/child; Hamover House for ages 11 and up, Oct. 30, 7-10 p.m., "Old Community Center," 10 School St., \$3 per person.
Heniker: New England College Campus Activities Board will sponsor a haunted house open to the Heniker community Oct. 29, 6-8 p.m., at the Heniker Fire House.
Laconia: The second annual Pumpkin Patch, Oct. 30, starts at 3 p.m., at the old train station in downtown Laconia and is free. Pumpkins for the carving contest can be picked up at the Black Cap through Friday. The cafe and the LaconiaMall's Beach Chamber of Commerce sponsor the event.
Lebanon: Halloween Fun Fest, Oct. 31, 4-6 p.m., Coburn Park and City Hall, tales from Pats and Recreation at 448-5121.
Manchester: Costume Parade, Oct. 25, 7 p.m., City Library Children's Department, 405 Pine St.
Pembroke: Pembroke Women's Club Fall Gate Trick or Treat, Oct. 30, Pembroke Academy parking lot, \$3 per family. Schedule: 3:30-4:30 parking, 4:40-5:30 parade, 4:30-4:45 costume awards, 4:45-5:30 car-to-car trick or treat, 5:45-6:00 parade. No one allowed to park after 3:45 or leave before 5:45.

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Foster's Online

Friday, October 22, 2004

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Experts: MtBE can taint deep public wells

Editor's note: For more on the scientific studies mentioned in this story, see this week's *Sunday Citizen*.

By ULRIKA G. GERTH

Democrat Staff Writer

AMHERST, Mass. — For decades Rockingham County has been drilling deeper and deeper wells in search of a dwindling water supply. Now a new study shows the search may come with a price.

Scientists have detected MtBE concentrations 10 times higher in deep bedrock public supply wells than in shallow wells.

The finding runs contrary to conventional thought that deep wells are less vulnerable to contamination, and should be a cause of concern to people in the county, according to one of the authors.

"I think so, but it should be tempered by the fact the concentrations we measure are very low," said Joseph Ayotte, hydrologist at the U.S. Geological Survey. "At the same time there are a lot of them (MtBE detections) and that's the alarming part. We see them everywhere."

Ayotte presented the study on MtBE in public and private wells in Southeast New Hampshire on Wednesday at the 20th Annual International Conference on Soils, Sediments and Water at the University of Massachusetts in Amherst.

The concentration and detection of the gasoline additive methyl tertiary-butyl ether increased statewide between 2000 and 2002, with considerably higher percentages for six counties — including Strafford and Rockingham — that in the mid-1990s mandated the use of reformulated gasoline which contains high levels of MtBE.

The gasoline oxygenate was added to combat air pollution following the Clean Air Act in 1990, but Maine and New Hampshire passed laws this year to ban it by 2007. The New Hampshire ban is still pending approval by the Environmental Protection Agency.

In Rockingham County, where Ayotte's team collected new data in 2003, 40 percent of 120 randomly selected public wells and 21 percent of 103 private wells exhibited MtBE concentrations greater than .2 parts per billion.

In New Hampshire, 13 parts of MtBE per billion is considered a health hazard.

To the scientists' surprise, 63 percent of public wells serving residential areas such as trailer parks, apartment complexes and condos contained MtBE, albeit at low levels.

"It was a fairly large number that we didn't quite expect," Ayotte said.

The study also concluded proximity to gasoline underground storage tanks and the level of urbanization affect the likelihood of detecting the additive in public wells. No other factor did, however, play a more significant role in the occurrence of MtBE than well depth — but not in a way the scientists had expected.

"You tend to think simple first and because MtBE comes from activities at the land surface you would at a first glance think a shallow well would have a higher concentration than a deep well," said Ayotte.

Instead, scientists discovered the deeper the public wells were, the more MtBE they found. In wells deeper than 300 feet, concentrations of one to 10 parts per billion were recorded compared to less than 1 part per billion in shallow wells. The correlation does not apply to private wells.

Ayotte said one explanation could be "a simple dilution factor" as the yield of New England wells tends to go down as the depth increases.

For Rockingham County, he said, it is bad news.

"In Rockingham County wells are increasingly being drilled deeper in search of adequate water supply and it may have implications for the contamination of future wells."

Ayotte said he didn't know what consequences the study's findings may have on well drilling in the state.

"As a science community person I would very much like to see a new study. This is the first time we have identified those high rates and relationship with depth. Before we go off and get too crazy with it we need to see if others find the same thing in other parts of the state."

The health hazard of MtBE is debated and, according to the Agency for Toxic Substances and Disease Registry, there is no evidence it causes cancer in humans. But laboratory studies on animals show a clear link between MtBE and the disease.

"If we have cleaner air and have to clean up some groundwater, it could be a reasonable tradeoff, but we really don't know what effect MtBE has in terms of chronic exposure," said John Peckenham, assistant director at the Sen. George J. Mitchell Center for Environmental and Watershed Research at the University of Maine.

Peckenham presented another study at the forum: "Maine's Experiment With Gasoline Policy to Manage MtBE in Groundwater." Maine dropped out of the reformulated gas program in 1999 and although the study found the concentrations of MtBE in wells distributed across a sand and gravel aquifer in Windham, Maine, were lower in 2003 than previous years, it is still ubiquitous in the environment.

"As long as concentration keeps declining, even though it's spread around, it will go away, but the fact is that the problem exists because of our need to drive our cars around. We're part of the problem," said Peckenham.

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Sunday, October 24, 2004

 [E-mail This Article](#)**Foster's Daily Democrat Editorial****MtBE contamination is reaching deeper into our lives****We cannot be made to choose between clean air and clean water**

The deeper we drill for water, the more extensive we find MtBE to be. The more extensive the presence of MtBE, the more we wonder how much greater we are at risk from the pollution of one of life's greatest needs.

The surprise result of a study presented last week was the finding that some deep bedrock public wells have 10 times the concentration of MtBE as some shallow wells.

The immediate inference to be drawn from this is that MtBE contamination is not limited to property owners with private wells. The public at large is at some risk.

What are we going to do about it?

If we don't do something soon, we or those who come after us will become desperate for potable water. All our technology notwithstanding, unless we take into account the damage we are doing to public and private water supplies, we will someday be faced with the condition present in so many undeveloped and underdeveloped countries — a scarcity of drinking water.

For too long we have looked at water as an infinite resource. It is not — not as long as we continue to poison our rivers, streams and lakes and underground aquifers.

For every action, there is a reaction.

Reacting to the Clean Air Act of 1990, petroleum companies began adding MtBE to gasoline. Of the options at the time, MtBE (methyl tertiary-butyl ether) was the economic choice of the refiners. Not long after refiners began adding the oxygenating agent to gasoline, anecdotal evidence began to appear that MtBE was adding to the risk in the already dangerous leaking and spilling of gasoline into private water supplies. Plumes of groundwater contamination began to show up radiating from known origins of pollution.

The ability of MtBE to "travel" from its source has been known for some time, but only now is there preliminary evidence of the danger of vertical travel and the risk it presents to public and community water sources. (The terms community and public are sometimes used to define the difference between water systems serving condominium developments, trailer parks and similar groupings and those that serve a broader segment the people of an entire city or town.)

What concerns scientists in the study conducted in southeastern New Hampshire is the large number of MtBE detections at deep sites.

One of the authors of the study is reported as acknowledging the findings should be of concern to people in affected areas.

"I think so," said Joseph Ayotte, a hydrologist at the U.S. Geological Survey, but it should be tempered by the facts that the concentrations we measure are very low." "However, Ayotte does go on to say, "At the same time, there are a lot of them and that's the alarming part."

What's really alarming is that private, community and public water sources are being contaminated — poisoned.

How great is the risk? The Agency for Toxic Substances and Disease Registry, a federal agency, says there is no evidence that MtBE causes cancer in humans. But there is clinical evidence that shows a clear link between the additive and the killing disease in animals

Alarmist? Maybe so. But we wish there had been more alarmists when chemical and food industries were conducting business as usual in the production and use of a variety of additives later shown to be hazardous to human health. And let's not forget the long-time foot dragging on the part of the tobacco industry and complicit government agencies in the insistence that tobacco products were only marginally dangerous, if they presented any danger at all.

John Peckham is the assistant director at the George J. Mitchell Center for Environmental and Watershed Research at the University of Maine. He says, "If we have cleaner air and have to clean up some groundwater, it could be a reasonable tradeoff."

"As long as concentration keeps declining, even though it's spread around, it will go away, but the fact is that the problem exists because of our need to drive our cars around. We're part of the problem," Peckham said.

Maine dropped out of the reformulated gasoline program five years ago. New Hampshire is still waiting to hear from the Environmental Protection Agency on its application to ban the chemical.

The people of New Hampshire should not have to buy into a "tradeoff" when it comes to clean air and clean water. They, and the residents of 49 other states have a right to both. Not a choice, but a right to both!

Our natural resources are a great gift — a gift passed on from one generation to another. While they are ours from which to benefit, they are also ours to protect for every generation that comes after us.

It's not a choice. It's a duty.

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Foster's Online

Friday, October 1, 2004

 [E-mail This Article](#)**Forum: Water seen as 'blue gold' of 21st century**

By MICHAEL GOOT

Portsmouth Bureau Chief

PORTSMOUTH — Water is the "blue gold" of the 21st century and issues surrounding its control will dominate the global scene.

That was the view of a panel of speakers on Thursday at a forum titled "Water Sustainability in a Local and Global Economy" held at the Unitarian-Universalist Church. The forum was part of "The People Speak" series and sponsored by the League of Women Voters. About 50 people attended.

Denise Hart from the Save Our Groundwater group, which is opposing the efforts by USA Springs to withdraw 300,000 gallons a day from its wells in Nottingham, said science showed this was not the right project because of impact on surrounding water supplies. The Department of Environmental Services initially denied the permit.

Despite the denial, USA Springs was successful on a subsequent application at obtaining the permit, so Save Our Groundwater is challenging the decision all the way to the Supreme Court.

Hart said USA Springs is just one of a wave of private interests trying to take control of groundwater supplies all over the country.

She noted many of these bottled water companies are making between \$500,000 and \$1.5 million monthly — all at the expense of local water supplies.

Hart said people should be more conscious of where their water supply is coming from. "If you had to carry your water, what would you do differently?" she said.

Tom Ballesterio of the University of New Hampshire said among some of the issues he sees are land modification and how that affects water runoff and pollution. Another issue is competition for water based on environmental, technological, social, geographic and economic factors.

"There is inadequate supply of clean, fresh water throughout the globe. This really affects public health," he said.

Doug Bogen, program director for Clean Water Action, said one issue is MtBE, which is an additive put in gasoline to make it burn cleaner. However, it has seeped into the groundwater supply. The chemical is a known carcinogen in animals and suspected carcinogen in humans.

Other issues are what to do with landfills, Bogen said. One noteworthy example is the Dover landfill near the Bellamy Reservoir, which the Environmental Protection Agency has decided not to cap, but to try a new method of flushing out all the chemicals out of the matter and collecting it.

Ned Raynolds, senior program officer at Clean Air-Cool Planet — a nonprofit organization committed to finding solutions to climate change, said it is important people think out of the box to solve these environmental problems.

Quoting from Albert Einstein, he said "the significant problems we face cannot be solved at the same level of thinking we were at when we created them."

He said too many solutions only solve the symptoms of the environmental problem, rather than the problem itself, or create other problems. The MtBe example is perfect. Rather than opting for automobile emissions testing or ethanol, New Hampshire chose to put this stuff in the gasoline supply, which in turn has polluted the water supply.

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Sunday, October 24, 2004

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MtBE showing up more often and found deeper than expected

ULRIKA G. GERTH

Staff Writer

The discovery that MtBE appears to increase with the depth of public wells puzzles experts who call the find "hard to interpret" and in need of more research.

Hundreds of feet below the surface, where logic says the most pristine water should be found, scientists in Rockingham County detected higher concentrations of the gasoline additive, MtBE, than in shallow wells.

There are differences of opinion as to how serious the problem is, but with a few exceptions, the deeper the well, the more MtBE was found.

"It was very surprising; we did expect to see a correlation but not a positive one," said Joseph Ayotte, hydrologist at the U.S. Geological Survey, who conducted the study of public and private wells in Southeast New Hampshire.

The study focused on Rockingham County, the most densely populated area in the state, where a dwindling water supply for decades has forced communities to drill deeper and deeper bedrock public supply wells. It is also a county where an unusually large number of residents — 75 percent — get their drinking water from ground water. About 25 percent use public wells as their primary water source.

The research team sampled source water — water flowing into the well — from 103 private and 120 public wells for the gasoline oxygenate methyl tertiary-butyl ether which was added to combat air pollution following the Clean Air Act in 1990.

MtBE has since become omnipresent in the environment, seeping through sand and gravel, saturating soil particles and traveling into the wells.

Bruce Bauman, soil and groundwater research coordinator at the American Petroleum Institute found the finding "curious."

Rockingham County, he said, might represent a "worst-case scenario" as the



groundwater system is intersected by fractured bedrock and consequently more susceptible to contaminants than areas where porous media act as a filter.

In Bauman's opinion, New Hampshire wells face a far greater threat from arsenic and radon, which unlike MtBE, will not disappear over time.

"If I was a health scientist I wouldn't be excited about having MtBE, but it wouldn't be on top of my priority list."

In Rockingham, Strafford, Hillsborough and Merrimack counties, where reformulated gasoline with its 15 percent MtBE content is mandated, the volatile oxygenate is considerably more widespread than in the rest of the state, that uses regular gasoline with no more than 2 percent of MtBE.

And the study showed the percentage of affected wells keeps increasing.

Last year, about 26 percent of randomly selected public wells in Rockingham County exhibited .5 parts of MtBE per billion or more compared to 20 percent in 2000. When the scientists lowered the reporting bar to .2 parts per billion, 40 percent of public and 20 percent of private wells proved to have MtBE.

But the highest concentrations were found in the deeper public wells, those over 300 feet.

In deep wells, levels of one to 10 parts per billion were detected, with a few reaching 50 parts per billion, thus topping the state's limit at 13 parts per billion, at which point MtBE is considered a health hazard.

For reasons Ayotte could not yet explain, the study "found no apparent correlation whatsoever" between depth and MtBE in private wells.

"The high rate of detection of MtBE is the bad news," said Ayotte as he summarized a presentation of the study at a conference on soils, sediments and water this week at the University of Massachusetts in Amherst.

"The good news is the low concentration. But unfortunately there is more bad news, the wells in Rockingham County are increasingly being drilled deeper in search of adequate supply and it may have implications for the contamination of future wells."

Between 1985 and 1998, the average well depth in the state increased from roughly 300 to 400 feet.

Although no recent statistics is available, Richard Schofield, hydrologist and water well program manager at the Water Division of the Department of Environmental Services, noted well reports from the 6,000 wells drilled each year reveal contractors have to search at greater depths for water, especially in the more populated southern areas.

"Ten years ago, the deepest wells we saw were probably in the 700-800 (foot) range. Today it's 1,000-2,000," he said.

Depending on the outcome of a new statewide study on MtBE by the U.S. Geological Survey, the state may change the guidelines for well drilling to encourage contractors to look for shallow wells at other locations rather than to keep drilling for hundreds of feet.

Deeper wells generally yield less water, a fact Ayotte cited as a possible explanation for the higher concentrations of MtBE.

"For people who're drilling wells, we might have to tell them they are less likely to find water and more likely to find MtBE the deeper they go," said Frederick McGarry, chief engineer for remediation programs at the Waste Management Division of DES.

Even though the study mostly detected minuscule levels of MtBE, it should be a cause of concern because of their frequency, Ayotte said.

Laboratory tests have linked high exposures of the gasoline additive to kidney and liver cancer in animals.

But nowhere in the environment will people face the same amount of exposure, and the levels of MtBE considered hazardous to humans are set a thousand times lower than the levels which saw effects in the lab, said Toxicologist Andrew Smith at the Bureau of Health at the Maine Department of Health and Human Services.

In New Hampshire, any water source with levels equal to or above 13 parts of MtBE per billion calls for treatment. The limit is based upon a cancer risk of one in a million and runs below the 20 to 40 parts per billion recommended as the upper limit by the Environmental Protection Agency.

"If you drink two liters of that water per day over a 70-year life, then you'd have an increased chance of cancer of one in a million," McGarry explained.

"It's not a huge risk but frequently people call about two parts per billion and ask if they'll get cancer tomorrow. I explain the facts to them but they still don't want any MtBE, and obviously I can't blame them."

With no other contaminants in the water, some people can taste MtBE down to five parts per billion. It has a turpentine taste and an odor like ether.

"Some say it smells nasty, whatever it means," said McGarry.

At this point, scientists can only speculate why depth of public wells appear to determine the concentration of MtBE more than any other factor, even more than urbanization and proximity to gasoline underground storage tanks.

"It's a surprising result," said Thomas Ballesterio, water resources associate professor at the University of New Hampshire. "Now the real question is, do they sample at that depth or is the well open at the top. If they sampled at the bottom, the result is a lot more valid. If it's an open-bore hole, you can't make any conclusions about it."

The study did focus on open bore holes and Ayotte said the team has discussed what role, for example, precipitation may have had on the result.

"The concentrations that we see could indeed be atmospheric although it doesn't seem likely," he said. "A lot more work needs to be done to figure out why we see this relationship."

Maine took its first step toward eliminating MtBE in 1999 when the state opted out of the reformulated gasoline program, and last year it seemed like the decision was beginning to pay off as it can take anywhere from days to

years for MtBE to reach the groundwater.

A new study from the University of Maine shows concentrations of MtBE in wells in Windham were lower in 2003 than previous years.

Even more surprising to the research team, however, was the statistical tie between the cost of cleaning up reformulated gasoline and non-reformulated gasoline.

"We really thought we would see a difference in cost with RFG because there is more MtBE in it," said John Peckenhams, assistant director at Sen. George J. Mitchell Center for Environmental and Watershed Research at the University of Maine, "and we were surprised we didn't find it."

The state of New Hampshire has put in a request to the EPA to allow the four counties in the south — including Rockingham and Strafford — to leave the reformulated gasoline program too, but it has yet to be approved.

"If EPA does not take action, January 2007 can come and go without anything occurring," said McGarry.

On that date, laws banning MtBE are scheduled to go into effect in Maine and New Hampshire.

Peckenhams described it as "a ban without a substitute." Ethanol, for example, may not be an adequate replacement because, Peckenhams said, it acts as a cosolvent, making gasoline and benzene even more vile.

"We still have EPA's mandate for groundlevel ozone that has to be met," he said and cautioned against hasty policy changes,

"We jumped into this policy (MtBE requirement) to solve air quality and everyone said 'Yes, we have to do this,' not realizing MtBE was going to be such a troublesome compound."

A proposed study in Maine is designed to look at potential fuel blends of the future, Peckenhams said, by spilling them intentionally and study how they behave in the environment.

"If we don't produce the contaminant and if we don't have spillage, the issue of MtBE will become non-news," said Bernie Lucey, senior engineer at the Public Drinking Water Program at the state's Water Supply Engineering Bureau. "MtBE will diminish on its own."

Ulrika G. Gerth can be reached at 742-4455, Ext. 5395, or via e-mail at ugerth@fosters.com

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Tainted wells raise questions about MtBE

By Liz Chretien
news@seacoastonline.com

With the recent news of high MtBE levels in Epping wells, questions about the gasoline additive are circulating: Where does MtBE come from? How dangerous is it? And, most importantly, how do people avoid finding it in their water supply?

Two separate auto salvage yards in Epping are deemed the problem in two contamination clusters of private wells. One of the salvage yards, Tim & Joni's Auto Recycling, has two wells, one testing positive for 3,000 parts per billion (ppb) and one testing positive for 1,500 parts per billion.

The other salvage yard, Epping Auto Salvage, has one well that tested positive for 860 ppb. Various private wells have been affected and the DES is currently investigating and performing further tests in the neighborhoods.

In a separate incident in Epping, a Getty station was also found to have higher levels of MtBE, at 30 or 40 ppb.

So the question becomes, if MtBE is so risky, why is it used?

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MtBE (methyl tertiary butyl ether) first appeared in gasoline in the mid-1970s, but it wasn't until the Clean Air Act Amendments of 1990 requiring the use of reformulated gasoline (RFG), or cleaner burning fuel, that it increased significantly, according to Jim Martin, public information officer for the N.H. Department of Environmental Services.

Since MtBE was one of the least-expensive oxygenates, the petroleum industry chose it to replace lead as an octane enhancer.

"It makes up a fairly good sized chunk of gasoline," Martin said.

The Clean Air Act Amendments of the 1990s required the use of RFG in cities with unhealthy levels of air pollution. However, the CAA does not require MtBE; instead, refiners may choose ethanol, another oxygenate made from corn grain.

"Some states were required by the Environmental Protection Agency to participate in the RFG program," Martin said. "But it wasn't until the program was implemented that issues with MtBE contamination started to arise."

New Hampshire was not one of the states required to participate in the RFG program, but did choose to participate. In 1995, the counties of Rockingham, Hillsborough, Merrimack, and Strafford commenced use of RFG.

However, in 2001, New Hampshire petitioned the EPA to opt out of the RFG program, but could not do so until 2004 because of EPA mandates. To opt out, the EPA must grant permission and New Hampshire must use an alternate fuel, such as ethanol. To date, the EPA has not granted approval for New Hampshire to opt out, according to Martin.

New Hampshire is currently involved in MtBE bans, and legislation was passed to stop using MtBE if the EPA grants permission to opt out of the RFG program.

New Hampshire has officially become the 19th state to impose a ban on the use of MtBE, effective Jan. 1, 2007.

States such as Connecticut, New York and California have already made the switch to an ethanol-based oxygenate to replace MtBE.

"We wanted to reduce air-quality issues, and we were not aware of the groundwater issues associated with MtBE," said Mike Fitzgerald, supervisor of mobile source planning for the Air Resources Division of the DES.

Currently, many states, including New Hampshire, are involved in an ongoing lawsuit against the petroleum industry.

"They knew in the 1980s that MtBE was potentially harmful to waters," Martin said. "It has become quite a mess."

State limits

There are no federal requirements for MtBE levels; however, many states have imposed their own limits. New Hampshire has a limit of 13 ppb.

According to Fitzgerald, while EPA has been detected in groundwater throughout the country, New England is especially vulnerable.

"It's a big problem in New England," Martin said.

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In New Hampshire specifically, Rockingham County has a high risk. According to a study done by the DES and the U.S. Geological Survey, Rockingham County has the second-largest population in the state and the largest population served by groundwater. This study revealed that, as of 2005, MtBE levels in Rockingham County increased from 20.3 percent to 23.1 percent, while statewide the increase was 15.1 percent from 12.7 percent.

Martin said there were wells in Northwood in recent years that were "knocked out" because of MtBE, but he could not recall an instance where the contamination levels in water were nearly as high as the levels detected in Epping recently.

According to Martin, MtBE is a problem because of its solubility.

"It travels through the ground and migrates faster and farther than other gas compounds," he said. "It is very difficult and expensive to remove from water. It's just a nasty compound."

According to Martin, the potential for MtBE contamination is possible anywhere gasoline is stored or whenever fuel is transported or disposed of. It can contaminate groundwater, surface water or soil.

A fact sheet on the EPA's Web site lists contamination possibilities as leaking fuel storage tanks, both above and under ground, pipelines, gasoline spills, and consumer disposal of old gas.

"Contamination can be as simple as tipping your lawn mower over and spilling gas into the ground," said Kevin Kelley, the Epping building inspector and code enforcement officer. "That's why it is important to be vigilant and to be careful with gas."

The risks

Early health concerns centered around direct inhalation of MtBE, according to Martin.

"There are no long-term studies of health effects on humans," he said. "It is not a known carcinogen."

However, based on tests done on rats, it is a suspected carcinogen. A DES fact sheet on MtBE said "studies with animals suggest drinking water with high levels of MtBE may cause stomach irritation, liver and kidney damage, and nervous system effects. An increased amount of liver and kidney cancer was found in rats and mice breathing high levels of MtBE."

Martin said people with possible contamination should get tests done as soon as possible and should avoid drinking the water.

"We tell people to take shorter showers and not to take very hot showers as a precaution," he said.

According to the EPA fact sheet, contaminated water may taste or smell like turpentine.

Get Informed

If MtBE is contaminating your water supply, the DES may be able to help. Requests should be directed to the Oil Remediation Bureau at 271-3644. Special funds to provide financial assistance may also be available. Information about these funds may also be obtained through the DES.



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Water Supply EngineeringEnvironmental
Fact Sheet

WD-WSEB-3-19

2000

MtBE in Drinking Water

What is MtBE?

MtBE is the abbreviation for the compound methyl tertiary butyl ether. This compound is a colorless liquid at room temperature and pressure. MtBE is a manmade material and thus its presence in water would indicate that manmade contamination exists in the recharge area of the well. MtBE degrades very slowly, is highly soluble in water, has a very small molecular structure and very low taste and odor thresholds.

Where Is MtBE Used?

MtBE increases the octane rating of gasoline and reduces air pollution by also increasing the gasoline's oxygen content. It was first introduced into gasoline in the early 1980s as lead was removed. The 1990 Clean Air Act Amendments required the reformulation of some gasoline. This requirement prompted an increase in the percentage of MtBE used in gasoline in the New England area currently to approximately 11 percent. There are few other uses of MtBE in normal commerce or industry.

What are the Health Effects?

The U.S. Environmental Protection Agency (EPA) has not set a formal **health-based** drinking water standard for MtBE in the federal Safe Drinking Water Act (SDWA). The N.H. Department of Health and Human Services, Bureau of Health Risk Assessment (BHRA) has recently developed a health-based drinking water standard for MtBE of 13 micrograms per liter (ug/L) for community public water systems. DES plans to adopt that value as a maximum contaminant level (MCL) in New Hampshire's Safe Drinking Water Act Program during the spring of 2000.

Studies with animals suggest drinking water with high levels of MtBE may cause stomach irritation, liver and kidney damage, and nervous system effects. An increased amount of liver and kidney cancer was found in rats and mice breathing high levels of MtBE. Because of the animal studies on MtBE, the BHRA considers MtBE a possible human carcinogen. A health information summary for MtBE can be obtained by calling BHRA at 271-4664. It can also be viewed or downloaded from their web site.

The EPA's public water supply program has recently made a nonhealth-based recommendation to limit MtBE in drinking water to 20-40 ug/L. This recommendation is based on preventing taste and odor complaints. MtBE has a very low odor threshold at 20 ug/L, while the threshold for taste is 40 ug/L.

Assistance from DES

If you have MtBE in your water supply, DES may be able to provide assistance to you in two areas.

1. DES may assist in identifying the origin of the contamination. Please call the DES Oil Remediation and Compliance Bureau at 271-3644 concerning this assistance.
2. New Hampshire has special funds which may be able to provide financial assistance to abate pollution from hydrocarbon contaminants, such as from heating oil fuel or gasoline that includes MtBE. Information regarding these funds is contained in the Petroleum Reimbursement Funds

information packet. These funds are also administered by the DES Oil Remediation and Compliance Bureau.

How Can MtBE be Removed from Drinking Water?

Unlike many other constituents associated with hydrocarbons, MtBE is difficult to remove from water. There are generally three treatment methods that have been shown to be effective in removing general hydrocarbon organics from drinking water. They are aeration, adsorption using activated carbon, and oxidation. These treatment methods are discussed below.

If the concentration of the contaminants is high, two treatment units (typically using different methods) are often installed. The first device is used to remove the "heavy" contaminant load while the second provides a "polishing step" to assure full removal of the contaminant(s) and to address "breakthrough." Aeration is often the first method used while activated carbon is often used as the polishing step.

See fact sheet **WD-WSEB-2-5** for information concerning purchasing and installation recommendations for water treatment devices. A treatment system should not be purchased until sufficient water quality testing has been done to identify all the following:

1. The short term variability of the contaminant(s).
2. Whether the contaminant concentrations are rising or falling over the long term.
3. What other contaminants are in your general area and how many are predicted to affect your well in the future.

If contaminants are present in a **pure product** state in the well, a recovery method is also necessary. This will reduce the size of the water treatment equipment needed.

Activated Carbon Treatment: Advantages and Disadvantages

Activated carbon has enormous surface area within each granule. One pound of activated carbon has a surface area greater than the size of a football field. Activated carbon is a material that attracts many types of organic contaminants to its surface. Once the removal capacity of the carbon is used up, then it may be returned to the manufacturer for rejuvenation (for very large users) or can be disposed of appropriately for smaller situations.

If activated carbon is used, the radon and mineral radioactivity concentrations of the water should be determined. Activated carbon concentrates radioactivity, potentially creating a low level radionuclide waste and possible source of increased radiation within the home. Activated carbon can also foster the growth of bacteria by concentrating other organics (such as food sources) on its surface. A final concern with activated carbon is the possible release of contaminants after they have been initially adsorbed. This action is known as desorption or dumping. This could occur if other ambient water quality characteristics change.

To address breakthrough and desorption, the overall amount of activated carbon could be divided into two treatment tanks and the two devices installed in "series." In such an arrangement any breakthrough from the first unit can be adsorbed by the newer carbon in the second unit. The advantage of activated carbon treatment compared to other methods is that the water does not need to be repressurized and is less likely to become contaminated by dust and other airborne contaminants. The disadvantage is that carbon attracts organic matter from the water and thus typically supports an elevated level of bacteria on its surface.

Aeration Treatment: Advantages and Disadvantages

Aeration treatment consists of passing large amounts of air through the contaminated water. The efficiency of the device is improved by breaking up the bulk of the water into many small droplets. The goal is to allow the contaminants to volatilize into the air. When aeration is used, two operational problems are possible:

1. If there are elevated levels of iron or manganese in the water, rusty precipitate staining of fixtures and clothing is likely. Iron/manganese pretreatment may be necessary.
2. Bacterial slime may grow in aerators requiring continuous or periodic chlorination. The advantage of aeration is that there is no disposal or regeneration of the treatment media necessary.

Other Possible Treatments of MtBE

New methodologies still in the trial or experimental stage include:

Oxidation Treatment: Advantages and Disadvantages. Certain organic contaminants will chemically react with oxygen and oxygen-like compounds. After the oxidation treatment, the resultant compounds may be fully neutralized, may have a lower level of hazard, or be more amenable to treatment by other means. Further treatment may still be necessary, however. Oxidizing chemicals could include potassium permanganate, (KMnO₄), hydrogen peroxide (H₂O₂), ozone (O₃) and sodium hypochlorite (NaOCl).

UV Destruction. One newer treatment technique, which is now being evaluated, is the use of ultraviolet radiation to break down MtBE. This treatment would then be followed by either hydrogen peroxide or ozone to oxidize the by-products of the UV breakdown. Presently, there are few instances of this treatment and thus costs and operational effectiveness are still being determined.

Monitoring Program After Installation of a Treatment System

Periodic laboratory testing should be done of both the raw and finished water to determine treatment effectiveness. The frequency of this monitoring would be determined based on variability and duration of the past sampling record and other site specific conditions. Where activated carbon is used, the carbon will lose its removal capacity and will need to be replaced in time. A monitoring program will be needed to predict the expected longevity of each new carbon recharge.

Laboratory Testing

The DES Laboratory and many commercial laboratories can test for MtBE. The DES cost is \$100 for each sample. This test provides information for all of the volatile industrial solvents and hydrocarbons regulated under the Safe Drinking Water Act. MtBE can vary in concentration, thus two or more samples should be taken before judging the average MtBE concentration in a well. The DES Laboratory can be contacted at 271-3445 or 3446.

For More Information

For more information please call DES's Water Supply Engineering Bureau at 271-3139. We would appreciate your comments concerning this fact sheet and your experiences in treating for MtBE. Drinking water fact sheets are available through the DES web site at: www.des.state.nh.us/wseb, then select "wseb fact sheets."

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